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A Brief Glance at Beekeeping

By M. G. Dadant,
Illinois.

Digest of a talk before the Illinois State Beekeepers' Association, November 15, 1933.

I THINK it is desirable to look back occasionally at the past. Such reflection gives us a better perspective of the progress that has been made in our line and an idea of where we might best seek further advancement.

Sugar cane, to our knowledge, was first discovered in the sixth century. Earlier than that, therefore, the peoples of the earth got their necessary sweets from the fruits, perhaps from maple trees, but largely from the bees.

The Indian civilization of the Orient is one of the oldest, and from its earliest recorded writings we find the honeybee and honey mentioned in songs and in law codes. The Indian sun god, Vishnu, was a blue bee in a lotus flower. The love god, Kama, carried a bow the string of which was made of bees. These represented the sweet pains that were supposedly caused by the arrow of love.

In Arabia the bee, Nachlat, was a gift from the gods. Mohammed in his Koran speaks of the honeybee and honey as a medicine—a healing for bodily diseases—while the holy book is equally healing for the soul.

A little later in Egypt the "honey-fly" was supposed to originate from the carcasses of decaying animals. It is evident that though honey was a great sweet and symbolized to those ancient peoples an almost divine origin very little was known about the natural history of the bee.

But by the time of the Greeks and the Romans the origin of the bee as well as the place of honey in the diet were more clearly understood. It is true that the queen was still referred to as the king. But Aristotle, Pliny and Virgil have handed down in their writings observations on bees which have become axioms. Aristotle was really the father of zoology. With the complete cooperation of Alexander the Great he made investigations of the animal and insect world which form the basis of our modern knowledge of these subjects. He mentions the wax moth, bee birds, the different kinds of bees within the colony and the different cells together with their functions as receptacles for pollen, brood and honey. Even in the lives of the stalwart Vikings of early Norse origin honey had a place. The Vikings went to war sure that in Valhalla there would be honey mead for them to drink.

But through all these centuries a major part of the life of the bee remained a mystery and beekeeping did not enter much into the channels of commerce. The late George Demuth in a series of articles in the "American Bee Journal" some years ago described very aptly the eras of American beekeeping. I have been free to use some of that material in this paper and here give him credit. He calls this first era of American beekeeping the "box-hive era" extending up to the time when the movable comb hive was invented by Langstroth. From Langstroth the box-hive era extends back to remotest times with only an occasional bright spot in the entire period.

Aristotle was one of these spots. Another was Francois Huber of Switzerland. His work was done about the year 1800. This great naturalist, although blind, through the help of his faithful servant, Burnens, performed wonderful, minute and painstaking experiments having to do particularly with the interior of the colony. He went to such lengths as to count one by one the inhabitants of several colonies of bees, even into the tens of thousands. He imprisoned the queen-cells and young queens to find if possible the function of the queen, the drone and the worker. While Huber was far removed from the movable comb, he did perfect a leaf hive, into which he fitted cut combs so that they could be turned like the leaves of a book. It was a very crude affair, not at all practical, but a great help to him in his entomological work.

The box-hive flourished in all parts of the world until the advent of the Langstroth principle in 1853. I say "principle" because Langstroth is noted not for the size of his frame or of his hive but for the principle of a hive with movable combs opening at the top. He, himself, was not sure that he had selected the proper size either for his hive or for his frame.

Quinby and many others, while they accepted the movable comb idea of Langstroth, argued that a deeper comb, being more like the natural habitat of the bee in her hollow log, was best and held to the deeper comb and larger hive.

About that time this country was deep in civil war with no time for

great changes or improvements. Although the honey extractor was invented in Europe in 1865, it was not heard of in America until two years later. Similarly, comb foundation had been invented in Europe in 1857 but delayed its arrival into this country till after the war. Both of these owed their rapid adoption in this country to the influence of Samuel Wagner who started the American Bee Journal in 1861, dropped it during the war and revived it immediately afterwards.

Then came the rapid growth years of American beekeeping. Italian queens were imported. Foundation mills were perfected by Dunham, Vandervort and Root. Extractors rapidly improved. With comb foundation came the honey section and the shallow super. With the extractor came for the first time the possibility of marketing large quantities of clear, pure honey. Quinby, Harbison, Adam Grimm, E. France and the elder Dadant along with many others made the bee papers hum with their discussions, mostly good natured but occasionally sharp in retort.

The comb honey era beginning about 1880 developed a system, with its main proponents in Michigan, of contraction in size of brood chambers. The best comb honey is produced by a quick honeyflow and a crowded brood chamber. The Michigan leaders soon learned this. Why not, then, increase crops, improve your quality by contracting more and more? And that is just what they did.

The results were gratifying, but the fad soon died of its own force. In a few years these same enthusiasts began to complain that their section was no longer a good honey section. They were getting only twenty-five pounds a year where they had previously got one hundred; then it had dwindled to ten pounds.

All the while there was a distinct class of beekeepers who had done their own experimenting and had held for deeper frames or, at all odds, larger hives. Within my own recollection the eight-frame hive has been relegated to the past. The ten-frame hive in one story became the standard breeding chamber. Then it was the shallow food chamber for winter and the double ten-frame brood chamber for the breeding season. Now it is the double brood chamber for the whole year or a big brood chamber in one story, following the theory of Quinby and Dadant who had tried for themselves and made their own decision in the eighties and stuck to it through the years.

To my mind one of the chief factors in the recent development of big beekeeping has been the automobile and truck. We had an interesting visit from a northern beekeeper who is running seventeen hundred colonies of bees. They are scattered as far as forty miles from the base. The honey comes into two big radial machines, is thrown out, and the supers are returned in trucks to that forty-mile yard in less time than ten years ago it would have taken to make a one-way trip to a yard ten miles distant with old Dobbin. He has easily solved his wintering problem. Some of the big potato cellars up there are empty. All seventeen hundred colonies are safely stored away in a corner of one of these cellars. With his idle equipment in a warehouse the owner can market his crop, play away his time for the winter or amuse himself in making plans for the coming season.

We are no doubt in an age of mass production. As one beekeeper said: "I can produce honey as cheaply as sugar is sold, and I will keep on doing it at a profit."

We have progressed a long way in manipulation and in the invention of instruments for aiding manipulation. I think one of the next moves is the emulation of improvement in domesticated animals—improvement of the race of bees. Not that our breeders have not been doing this very thing during the past three generations. They have been conscientiously trying but they have not had the opportunity. We have it now. The Watson method of artificial queen insemination is a fact. It hasn't been pushed forward. Why? Because there has not been sufficient demand for it. Some day when honey prices get better and the urge comes on the part of the beekeepers, they will demand the speeding up of this wonderful work by government agencies to its ultimate conclusion.

Also, we can profit by a thorough marketing agency. We have too many honeys in this country, and they range too widely in their elements. Some sort of an agency is going to have to get these results of the professional men, classify them, and then start bottling or canning a honey that will fit the needs for certain purposes. My own physician would be glad to prescribe honey for sweetening of baby foods but is afraid to do so because of the variation in the honey offered. He recommends, instead, a standard Karo.

I hope that the coming day in beekeeping is the development of the ideal bee and of the fixing of the ideal uses for honey. In the meantime, let us not be idle.

Boiling Water and Sunshine -- Doughboys Against Disease

They are always a great pair—boiling water and sunshine against disease. Mrs. Lyle (Newman I. Lyle, Iowa) and a helper, make real fun of sterilizing equipment in this outdoor fashion. Then, if you wish, a good scraping, a coat of paint and back everything goes into use. It must be remembered, of course, in handling material from foulbrood colonies that it takes some caution and considerable horse sense not to expose anything dangerous to bees from healthy colonies.

FAMOUS SAYINGS

April—

Sam A Wade A BOy Lost HIs ear off In war Oh My

"A Swarm of Bees in May Is Worth a Load of Hay"

S'Matter?

ONLY five answers this month out of all the readers of the Journal! What is the matter? If you folks quit on us, why we will have to quit "Famous Sayings."

Here is the best answer for April, from William Hassler, Princeton, Illinois:

"'A swarm of bees in May is worth a load of hay.' One day in May, about thirty years ago, I watched a neighbor hive a stray swarm of bees, and while he was hiving them he repeated this verse:

'A swarm in May is worth a load of hay,
A swarm in June is worth a silver spoon,
But a swarm in July isn't worth a fly.'

"It was the first swarm I ever saw and it was a case of 'love at first sight.'

"The first bees I owned were in a hollow log, and on my birthday (the 10th of May) they swarmed and also swarmed several times afterwards. Four years later, from twenty-four colonies in Danzenbaker hives, I produced a ton of honey.

"Most of my May swarms have been a disappointment because they usually swarm again in June. Since I've been using two-story standard hives I've been quite successful in preventing May swarms.

"In June when I try to crowd them into one story, with comb honey supers on top the swarming nuisance begins in earnest.

"Last year I left most of my bees in two-story, ten-frame hives all summer and about the only ones that swarmed had old queen cells. Those that did not swarm filled from five to eight comb honey supers.

"I believe the Dadants are right. A standard ten-frame hive is too small even for comb honey and, were I starting again I would use either the Modified Dadant or the ten-frame Jumbo because they would be cheaper than two-story hives and not so many frames to handle. My best colony filled about 250 sections and was worth two or three loads of hay because they didn't swarm in May or at any other time."

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W. C. Greenleaf, Muir, Michigan: "Centuries ago bee masters realized that a late swarm was of little value, especially because of the way bees were handled in those days. This fact caused the famous saying to be coined.

"The locality affects the truth of this saying a great deal, and with a good fall honeyflow, even a July swarm may build up a store for winter. It may even make a surplus when hived on drawn combs.

"We all realize the bees were created for the purpose of pollinating the flowers so that the seed may be developed. How many, however, stop to think of the wonderful provision of nature which caused flowers to bloom from early spring to late fall so that bees may be kept busy all summer. Steady employment is the best thing for man and bees alike. Idle bees will rob if given a chance, and idle men are sure to get into trouble."

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Herbert James, Sumner, Mississippi:

"This old saying was quoted by Mr. J. E. Crane in Gleanings, April, 1925. I do not know where it first appeared. Possibly it is one of those rare old sayings about whose origin we have no record. I do know that the author surely must have been an old Bee Master, as it is more true than most of us beginners think."

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W. C. Fleming, Greensboro, North Carolina:

"Some forty-five or fifty years ago when I was a small boy my grandmother who lived with us said plenty of times when the bees swarmed in May, 'A swarm of bees in May is worth a load of hay.' When June came she would say, 'A swarm of bees in June is worth a silver spoon,' and if a swarm ever did come out in July she would say, 'No good—a swarm of bees in July is not worth a fly.'"

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E. H. Carr, Jameston, New York:

"As far as I am concerned, I have no use for the hay, for all the livestock I own is two pet chipmunks, and they do not care for that kind of food. As to the swarm of bees, there is always room for one more."

THIS MONTH'S FAMOUS SAYING

Burt found nO studieS For His KeN

W. C. Greenleaf, of Muir, Michigan, suggested the Famous Saying for this month. You will find this given by one of the real old bee men. The saying is interesting because of its substance, and it should bring many replies because the problem suggested by the saying is a common one among beekeepers, and many proofs have been given of its truth.

Now don't disappoint us this month. Five answers in April was altogether too small a number for this interesting contest. Just send in a three hundred word story and remember the winner may choose any book listed in April, p. 171. Each capital in the above sentence begins a word in the "Saying." Go to it!

Our Cover Picture

This month's cover shows the red-bud or Judas tree in bloom. This shrub or small tree is found from western Pennsylvania to southern Michigan, southern Iowa and Nebraska south to western Florida and eastern Texas. It grows along streams in woodlands on moist soil. In Alabama it begins to bloom in late February and in the northern part of its range in April and early May.

The red-bud is named from its bright bloom which appears in spring before the leaves. The twigs and branches are covered with these deep pink flowers which at a distance give a rich reddish hue to the landscape. It is important to the beekeepers in localities where the trees are numerous and offers a few days good honey-flow very early in spring when forage is most valuable.

There are related species, the Texan red-bud which is found in south Texas and Mexico and the California red-bud which is common to the mountains of California.

This photo by J. C. Allen was taken near Madison, Indiana and shows the Ohio River in the distance.

Examining Packages After Hiving

It has been our experience that packages should be examined in about ten days for laying queens and then left alone. Too much handling seems to have something to do with the failure of queens. Any packages at that time which seem to have poor queens are marked and another examination made in about ten days more to be sure. We usually expect about a twenty per cent shrinkage in packages between the time of introduction and the end of the season.

The package cage is usually removed about the fifth day after installation, being taken out as quietly as possible.

If the weather is very cold when packages arrive, it does no harm to put them in a cool damp cellar and feed them occasionally through the cage wires with sugar syrup spread on with a brush until the weather warms up. Usually it is safe to keep the packages this way several days. In most seasons a suitable day soon arrives when they may be hived without trouble.

Lantern Slides on Bees and Honey

A series of thirty-two lantern slides has been assembled by the Beekeeping Division of the University of Illinois for loan to high school and grade school teachers of the state. These are available to Illinois teachers free, except for mailing charges, by application to the Visual Aid Service, University of Illinois, 113 Education Building, Urbana, Illinois. Another set, covering the anatomy of the honeybee, is also available.

A written explanatory discussion, accompanying the first set of slides, covers the organization and make-up of the colony, activities of the queen in egg-laying, the development of the brood, the collection of pollen, the service of the bee in pollinization, the sting and its use, and lastly, a comparison of old and modern beekeeping with the method of producing extracted and comb honey, including the gathering of nectar and secretion of wax.

Beekeepers of Illinois should suggest to the teacher the possibility of using these slides with their classes, especially if the beekeeper or some member of the family cannot present a discussion personally. The beekeeper might offer to loan a small display of actual material to supplement the slides such as observation hive, samples of honey, or other materials.

Four reels of the Federal Government film (35 mm.) entitled, "The Realm of the Honeybee" are also available to schools having moving picture projection apparatus available. This is fine, where funds are sufficient to cover express charges, but the series of slides can be secured for very little expense.

Spraying Outfit for Washing Combs

We recently received a visit from George H. Delvin of 110 North 12th Street, Henderson, Kentucky who had shipped on ahead an outfit for washing combs with a spray. It is an ingenious device Mr. Delvin has made which he has tried himself and likes. He brought along three combs which he had washed and which appeared to be free of any cell material. The combs can be washed one at a time under a force spray, in a metal tank with a pan to receive the runoff to be used again. Mr. Delvin thought it might be used for spraying solutions or just plain water.

His main idea was originally to recover combs in good condition which were left with bees dead in colonies which had been lost from spray poisoning in an orchard district.

Going Modern

This picture has little significance except that it is of an "old-fashioned" Chevrolet truck. The trucks that draw up here today, so the owners may pass a neighborly few hours, are of a different type. Stream-lined, ton and a half dual-wheeled affairs going south or going north or going east or going west. Bees moving. Supplies moving. Beekeepers moving—modern beekeeping.

Beekeepers no longer sit in their house by the side of the road with the neat apiary and the little honey-house tucked in a grove of trees. That may be more poetic and much more enjoyable, but this day beekeeping is far-flung and demands hard roads and speedy transportation.

(Incidentally, the smiling driver above is Elva Kirlin, our young assistant manager of the Dadant apiaries whose name so often appears in these pages.)

Observations on Inspection in Iowa

By Howard Shipton,
Inspector of Apiaries,
Iowa.

THE inspection work in Iowa is carried on mostly under a county area clean up plan. Owing to the small amount of the fund available for the work it has not been possible to include the entire state under this program. Yet emergency work and help to individual beekeepers have been general over the state.

I have learned through experience that the most difficult part of the inspection is not handling the bees but handling the beekeeper. If an inspector has not the individual efficiency to get the cooperation of most of the beekeepers, he should look for other employment as he is not cut out for the job. By this I do not mean that it is possible for a man to go out and do police duty without using force and making some enemies. It should be kept in mind that the inspector is employed to help the beekeeper save financially and that he will not destroy more than is necessary. This should apply to the small beekeeper as well as the commercial producer. I have never asked a beekeeper to do differently than I would if the bees belonged to me. It is unfortunate for the inspector that so often he is referred to as an instrument of torture and destruction. Can we be surprised if the inspector is treated as the little boy would the dog catcher when the work is started in a new locality?

We have a great many small beekeepers on farms who number several hundred in some counties. Where inspection is started for the first time considerable additional time is spent in locating all of the bees. This is done by making a complete canvass of the area to be inspected. It is very important, as a diseased colony overlooked every few miles would be a source of reinfection. Small apiaries are much more dangerous in spreading disease among apiaries than the larger ones. This is due to the fact that the bees in a large apiary usually clean up exposed material before other bees reach it. We use a county map to a good advantage and the exact location of apiaries is marked on this map. The section and township are also indicated under the beekeeper's name. This makes it possible to follow up the work with less expense and delay.

We have no burning law in Iowa and infected colonies may be either treated or destroyed. Yet through the educational program carried on in conjunction with the inspection work 73.7 per cent of the diseased colonies were destroyed during 1933. It is the general experience that when a beekeeper learns that disease is in his bees or equipment, he is willing to undertake any reasonable measure to correct the situation if properly approached. There is no doubt but the shaking method is fast becoming old fashioned and that it has been the means of spreading a great deal of disease in the past. Yet in some instances when the percentage of infection is large it may be used to good advantage if properly done. There still remain a few beekeepers who treat their diseased colonies among those that are clean. Also some who pick up one or two diseased colonies at night and truck them off three or four miles. Later another trip is made to treat the bees and still later another to bring them home. I am at a loss to know why any beekeeper would take the chance of spreading disease and go to this additional expense when the replacement can be made with package bees. If the beekeeper insists on treating and if only part of the colonies in the apiary are to be treated, it is advisable to move all clean colonies to a new location and treat those diseased on the old location. This is a far better method than moving the infected colonies as it is much safer and the bees need be moved but a short distance. We find that the beekeeper who has not the heart to destroy a comb or gas a diseased colony of bees seldom makes much progress in the eradication of disease. Foulbrood reminds me of the kitten with the mouse that usually gets away if played with. Very few beekeepers are competent to handle foulbrood for the first time, and we find it best for the inspector to do the work with the help of the owner when possible. Cooperation can be expected from those who succeed but seldom from those who fail.

In making inspection I consider each apiary as an individual problem of its own and the method of treatment is arrived at in accordance with the percentage of disease found. If a large amount of disease is found, we usually recommend the double shaking method of the entire yard if the season is favorable. From experience we have found that there is a great deal of recurrence of foulbrood when colonies are shaken directly on foundation. This recurrence takes place at times several years after the treatment has been made. This is quite confusing and often the neighbor beekeeper is again accused of spreading disease. If the entire apiary is not to be treated, it is advisable to destroy all infected colonies and disinfect the equipment. We do not advocate the burning of wood parts that can be disinfected safely. Diseased colonies should be taken care of as soon as found and not allowed to sit where they may spread disease into clean colonies. To destroy bees we have found cyanogas very satisfactory. It leaves the combs free of bees and there is no attempt of the bees to leave the hives as there is in the use of sulphur.

We are often told when the work is started in a new area that it will be impossible to eradicate disease on account of bees in trees and buildings. Iowa has a large number of bee trees and numerous colonies in buildings. Yet we have been successful in the eradication of disease in apiaries located in their midst. I have worked in localities where most of the bees in hives had died with foulbrood and found big strong colonies working in some old building that had been there for years. Some of these colonies are diseased, yet I believe the percentage of disease is much less than it would be in hives. We know that bees in nature are less inclined to rob, due to the fact that they usually have plenty of stores and are not manipulated. I have found some of these bees diseased but I do not believe disease will kill a colony in a building or tree that has plenty of room, Bees move off of the infected material and establish their brood nest on new comb. I believe that the infection is kept under control in that way. There is no doubt but what disease is often spread through the exposure of infected material after the bees have been killed by those not experienced in beekeeping.

"How often should bees be inspected?" is a question often asked. When

disease is found in an apiary during the spring or summer we make an effort to make a second inspection as late in the fall as possible. Diseased colonies overlooked and carried into the winter are the most dangerous as they are apt to be robbed out during the winter or early spring. An apiary may all be exposed to disease at the same time and the infection stored in the combs. Yet we have no way of knowing that it is present until it is fed to the young larva and foulbrood develops. Some colonies develop soon after exposed while others may carry the infection for a long period before disease appears.

The owner often spreads disease among his bees through the exchange of combs, and the practice should be avoided as much as possible in apiaries where disease is present. Those having bees should learn to do most of their own inspection as it is not always possible for the inspector to do the work as often as it should be done during the season. Bees should be carefully inspected during the building up period in the spring and at the time supers are to be put on. They should also have another inspection before removing the honey in the fall and again just before preparing them for winter.

I do not believe there is much to be gained by marking or numbering supers so that they are put back on the same hives. If infected honey is extracted, the extracting equipment such as the extractor pockets, capping boxes and knives, may be the means of spreading disease.

The Pollination of Kalmia

John H. Lovell and Harvey B. Lovell have an article in Rhodora, Vol. 36, February, 1934, on "The Pollination of **Kalmia angustifolia**." They review the literature about this interesting plant which explodes its stamens, showering pollen on its insect visitors. In the East, **Kalmia angustifolia,** the sheep laurel, is found extensively. The Lovells describe it as very abundant at Waldoboro, Maine, associated with the earlier blooming Rhodora.

The pollen is not discharged until the flower is fully expanded. The ten dark purple anthers are held in ten pouches in the corolla-limb, so formed that they prevent the anthers from springing out prematurely.

"We have frequently seen the stamens sprung by various kinds of bees and yet insects visit laurel so rarely that observation might lead to the conclusion that they are not numerous enough to effect pollination. Our observations show, however, that the flower is effectively cross pollinated by bees."

Canadian Post Office Also Accepts Single Screen Cage

In response to an inquiry by R. M. Pugh, Secretary of the Saskatchewan Beekeepers' Association, the Canadian Post Office Department makes the following announcement:

"With further reference to your letter respecting the transmission by parcel post of shipments of live bees, I may say that, in view of the representations which have been made to the Department, we have decided as an experimental measure to accept bees in single screen wire cages, for transmission by parcel post during the forthcoming season, and we are issuing the necessary instructions to our Service within a few days."

Death of Colonel Walker

Colonel H. J. O. Walker, from whom a fine collection of beekeeping literature was secured for the Dr. Miller Memorial Library at the University of Wisconsin, died at his home in England on January 14. Colonel Walker considered that he had in his library almost every beekeeping writing worth the having. His collection will, we hope, continue indefinitely to be a monument to the beekeeping industry throughout the world.

Mr. S. L. Odegard, a prominent telephone utility magnate who provided the funds for purchasing the Walker collection, died of heart trouble at Pinehurst, North Carolina on March 18. Mr. Odegard had a very strong love for nature, and it was his own suggestion that he provide the funds for the purchase of the Walker library.

H. F. Wilson, Custodian,
Dr. Miller Memorial Library.

Sweet Mud

Robert Mead in April speaks of clover growing along river banks where the rich mud offers a good soil for growth. A few handfuls of sweet clover scattered along the river bank or lake shore will grow and spread faster than seed scattered on soil nearby.

That is true. With a general acceptance of sweet clover, it is often good practice to scatter seed in such places within reach of the bees every year.

A Real Big Beehive

This picture is the same as the one that appeared on the cover of the March number of "Bees and Honey." It shows the display hive on a truck used by Jim McCrary of Alameda County, California.

"This picture, which appeared on the front page of 'Bees and Honey,' is of a big beehive on a truck I exhibited in front of Hotel Modesto at the California State Convention last December. The big beehive attracts attention and the bees working on the snow-white extracting comb and the brood comb create interest. The third job, selling the honey, is up to the salesman.

"The hive is standard 10-frame with comb super, multiplied in all proportions by 3½, making it six feet long, five feet wide, and four feet high. No bottom-board. Standard top. Constructed of 2x2 for framework. Three-ply veneer sheeting. Composition paper on roof to waterproof. Dovetail effect accomplished with the use of a tri-square and lead-pencil. The same for line between hive-body and comb super."

Jim McCrary,
("Bees and Honey")

Sainfoin, Fodder and Honey Plant

By E. W. D. Madoc, England.

SAINFOIN is one of the most important sources of honey on the continent of Europe, and is also very valuable as a fodder plant.

The word "sainfoin" is French and means "wholesome hay"; its botanical name **Onobrychis sativa** also speaks for its palatability, **Onobrychis** meaning "that for which asses bray."

In England it is grown mainly in the southern and eastern counties where the chalky subsoil and small rainfall are particularly suited to its needs. Sladen describes sainfoin as being "the chief honey plant on the chalky uplands of southeast England."

There are two distinct varieties of sainfoin grown in this country; the common sainfoin which blooms only once in early June, but which will give satisfactory crops for three or four successive years, and the giant sainfoin which resembles common sainfoin in appearance but blooms twice during the year, first in early June and again at the end of July or early in August.

Both varieties are generally sown under cover crops of barley or oats and cropped the following year, but the giant is only cropped one year and is then plowed in.

In the county of Hampshire a special strain of the common variety has been evolved by long selection which will stay down for twelve or fourteen years.

Sainfoin generally comes into bloom a week or ten days before white clover, and not only does it yield heavily under suitable conditions but it will also yield quite well when weather conditions are too bad for white clover to secrete at all.

Although the giant sainfoin blooms twice, it never yields as heavily during the second period, even though weather conditions for nectar secretion appear to be ideal.

In seed growing areas the common sainfoin is probably the more valuable honey plant, because the seed crop is taken from the first—and only—flowering period; whereas the giant sainfoin is always seeded in August, the first cut being taken for hay after it has bloomed for about a week.

Sainfoin is valuable as a honey plant, not only because it yields heavily and surely, but because it helps to shorten the gap between fruit bloom and the clover harvest.

Some years ago, during a bad honey season I had two equal sized apiaries four miles apart with similar floral conditions except that one apiary was near an eight acre field of sainfoin. We had two weeks good honey weather just before the clover was out, when the sainfoin was in full bloom; the result was a yield of fifteen hundred weight of honey from the sainfoin apiary against a total of two hundred weight from the other.

From an agricultural point of view sainfoin is remarkable in its production of the finest possible quality of green food and hay. Around Newmarket with its famous racing stables, much sainfoin is grown to supply hay for the valuable horses reared and trained there.

Red clover yields a greater weight of hay than sainfoin on good soils, but largely loses this characteristic on the thin chalky soils on which sainfoin thrives, and the latter also scores on clover sick land as it is not so susceptible to clover sickness.

Sainfoin in This Country

There have been many attempts to establish sainfoin in America but with little success thus far. More than fifty years ago an experimental garden of honey plants was established at the Michigan College of Agriculture. Sainfoin was one of the plants tested there. At that time it was reported as not sufficiently hardy to succeed in that climate. This, however, would not account for the failure in other sections where the climate is mild.

It should be remembered that attempts to establish alfalfa met with similar failure for many years until it was discovered that the soil must first be innoculated with the peculiar bacteria with which the plant is associated. Once soils were innoculated alfalfa culture became general. Whether for lack of proper innoculation, or for lack of adaptation to our soils or for some other reason, sainfoin as yet is not successfully grown in most American localities. Extensive trials have also been made in some parts of Canada.

Northwestern Illinois Loses Two Leaders

S. F. Peterson, Secretary of the Rock Island County Beekeepers' Association, sends us notice of the death of Dr. J. C. Meyers, President of the Rock Island County Association, who passed away Sunday night, March 4. Dr. Meyers was sixty-eight, a native of Rock Island County and a Moline physician for forty-two years. He was interested in farming and maintained a fruit and experimental farm in Coe township. Politics and farming, including bees, were his hobbies.

Mr. Peterson reports also the death of Jesse Simpson of Cordova, on January 1, a member of the Rock Island Association. He was eighty-two years old and a beekeeper since a small boy.

What Shall We Do About It?

Reports of loss of bees from spray poisoning are increasing. Potato spray seems now to be a prominent offender. Dr. Tanquary in the March number calls attention to the loss from the spraying of potatoes in the Red River Valley. Beekeepers in the northwest are having their troubles with this same crop spray. Add to this the losses in orchard districts and it presents quite a problem.

Farm Credit Administration Okays Loans to Beekeepers

Thos. Atkinson of Omaha, Nebraska tells us that a telegram to local officials, at Omaha, received from Washington, during the week of March 19th, places the official stamp of approval on loans to beekeepers. Loans may now be made, according to this report, through the Production Credit Corporation and the money may be used for any expense connected with the upkeep of the apiary or the production of the crop. This is good news. Beekeepers are now on a par with other agricultural classes.

Migratory Beekeeping

Migratory beekeeping as now practiced is a commercial success in many places, notably in California where the beekeepers move the bees first to the orange groves and later to other pastures.

The first large scale experiment in migratory beekeeping is all but forgotten by present day bee men. It was in 1878 when C. O. Perrine, a honey dealer of Chicago, bought a steamboat and two barges in New Orleans for the purpose of moving bees northward. The plan as announced was to move the bees north with the advance of the season as far as St. Paul. It was then expected to return south for the winter months. Large crops were anticipated and plans were made to export the honey direct to Europe.

Perrine bought a steamboat and two barges and loaded on about 1000 hives of bees. The expedition was late in starting and one accident after another delayed him. The summer was passed with little honey gathered and without having gone farther north than the mouth of the Illinois River.

There were heavy losses of field bees through dropping into the water on their return from field trips. The final result was the loss of about $12,000 in the venture.

O. O. Poppleton later succeeded by similar means along the Indian River in Florida where he kept bees for many years. He, however, removed his bees from the boat to apiary sites on land.

Since the automobile has come into common use the beekeeper's problems has been greatly simplified and he finds it an easy matter to move to new pastures when for any reason his crop proves disappointing.

Our Honey Goes Abroad

Reports indicate that more than a million pounds more honey was exported from this country in 1932 than in 1933. The total of exports for the last year was more than four million pounds. The little country of Holland bought more of our honey than any other foreign nation. Germany was second and Italy third in volume of purchases. The British Isles buy honey in great quantity but most of it comes from British possessions, Canada, Australia and New Zealand.

The foreign market is an important outlet for American honey and if expansion is to continue, careful attention must be paid to the demands of the foreign customers.

Reports from Germany indicate an increasing demand for honey and it is said that prospects are that the imports for the present year will be substantially above those of last year. Honey from many countries is contesting for this market. The seller who offers a product most pleasing to the buyer with delivery at the proper time is likely to get the orders.

Official reports show that the German market was largely supplied by Cuba and Guatamala in 1933.

Better Bees to Come

Now that code prices guarantee a liberal return to the producer of live bees, the northern buyer has a right to expect that the southern shippers will give more attention to the improvement of their stock. In recent years of ruinous competition the shipper could not afford to make any expenditure which would not directly increase his volume of sales. Under improved conditions a better average stock should be shipped and it may well be that the buyer will find that he gets more for his money than before.

Letters have been coming to this office asking where better stock can be had and saying that some breeders have permitted their bees to deteriorate much below former quality. Since there will no longer be much difference in price, the buyers will take careful note of results and the shipper who offers the best stock with good service will be the one who gets the big volume of business.

Selective breeding offers an opportunity to give a measure of quality not commonly available but it requires careful supervision and long continued attention. Not every breeder is adapted to such work but it is something to be considered by those who hope to attain a position of leadership in the industry.

Charles Dadant's Philosophy

Had Charles Dadant lived until the present day he would have been much interested in the present attempt to achieve social justice. In the year 1886 he wrote to his friend Edward Bertrand in Switzerland, as follows:

"My dream is of a complete association; the disappearance of misery; it is of the fraternity of all men, equal, well taught, instructed according to their capacities, paid according to their work; but all having the right to live."

He also told how he found himself in the bad grace of some friends whom he met when first he arrived in the United States because he predicted that slavery would be abolished in this country. Closing his comment he said:

"What gave me these foresights? My faith in justice, in humanity, which always advances and progresses. Imagine anything which is better, more just than that which exists and be certain that this thing is in the future."

When Charles Dadant died in 1902 there were no aeroplanes, the automobile was only a rich man's toy and men toiled at the hardest tasks for twelve or more hours per day. He was looking into the future to an ideal toward which we have already made much progress.

Honor to Whom Honor Is Due

Every few years interest is revived in foreign races of bees. From the time of the invention of the movable frame hive beekeepers have continued to seek better bees. The first bees introduced into this country were the common black bees of Europe which were brought by the early colonists. When Samuel Wagner became interested in the Italians through reading Dzierzon's writings about them in the German magazines he attempted to import them to this country. His first effort was a failure and he tried again with the assistance of Langstroth. Richard Colvin, Edward Jessup and P. J. Mahan also had a hand in the early importations. S. B. Parsons is generally credited with the first really successful importation, although the others succeeded very soon after. Charles Dadant solved the problem of large scale importations after much discouragement and loss.

Langstroth was the first to introduce the Egyptian race of bees and advertised them extensively for about two years. Wm. W. Cary also bred this race extensively but both men soon decided that they were inferior to Italians and abandoned them.

When the Cyprian race came to public attention D. A. Jones of Ontario with the assistance of Frank Benton brought over a large shipment of Cyprians and Holy Land Bees which gave full opportunity for testing them by all who cared to do so.

Henry Alley introduced the Hungarian bees and probably also the Punic or Tunisian bees neither of which proved popular. Both races were black and too much like the common bee already here to arouse much interest.

The introduction of the Carniolan and the Caucasian bees can probably be credited to Frank Benton who sent queens of both races to this country at a time when few if any had yet been brought in.

Honey to Feed the Fish

The Japanese Bee Magazine, Sangyo-Yoho, recently published an article on feeding honey to fish. In that country fish culture is an important industry and proper feeding a subject of much interest. S. Naito has experimented on feeding honey to various animals and reports success especially with fish. Trout, Carp, Gold Fish, Catfish, etc., all thrived on a honey diet and showed increased growth as a result. The honey was mixed with flour for feeding. It was found that the flesh of honeyfed trout was moderately fat, not too fatty, the flavor very delicious and with a savory odor. The honeyfed trout was also found superior to natural ones in point of keeping the color and flavor when put in storage.

Beekeepers who live in the vicinity of fish culture stations might well call these results to the attention of the fish growers who might be interested in similar experiments.

Bees in Court Again

There is much interest in the floral trade in a recent action in court because of bees visiting a greenhouse. Flower growers of Holmsburg, Penn., have brought action against a local beekeeper seeking to compel him to keep his bees off their property. The florists charge that they have sustained losses of about $1500 per year from damages of the bees to snapdragons in their greenhouses, and from customers being driven away from fear of the bees.

The outcome of the case will be watched with interest by florists as well as beekeepers. Some witnesses in the case testified as to the value of the bees while others condemned them. It was suggested that the growers should screen their windows as the logical way to protect themselves against the visits of the bees.

According to some newspaper reports a new point has been raised in this case in the contention that the bees pollinate the snapdragons whereupon they immediately drop their flowers thus causing loss to the growers.

Such complaints are far less common than in past years and beekeepers seldom have difficulties as they once did when it was generally thought that the bees were doing injury to fruits or flowers.

Swarm Control

The year 1892 when Demaree published his method of swarm control which later became so generally adopted under name of "Demaree Plan" marks a turning point in beekeeping practice. Following the invention of the comb honey section the tendency was toward smaller and smaller hives in an effort to drive the bees to work in the supers. So far did this practice go that honey production became unprofitable in many places.

Naturally with such small hives swarming became an acute problem and much space was given to its discussion in the bee magazines. When Demaree came forward with a method to control swarming by means of lifting the combs containing brood to an upper story above a queen excluder, leaving the old queen below with one frame of unsealed larvae and the rest of the space filled with empty combs, he changed the trend of beekeeping. Not only did he control swarming but he provided room for the queen to lay and increased the population of the colony and of course the size of the honey harvest.

This started beekeepers back toward sanity in their management. By use of the extra brood chamber the beekeeper adopted in effect a large hive. Although he was required to expend some labor to accomplish the necessary manipulation, he secured results similar to those obtained by those who used large hives. It required many years to accomplish the result but Demaree started the beekeeper on the road which led to the use of the large hive, even though he used small units.

Thus unconsciously do we do things which bring results far beyond what can be seen when a beginning is made with anything new.

Better Bee Pasture

The interest in sweet clover on the part of the farmers offers a special opportunity to the beekeeper who looks ahead. Few farmers are particular as to the special strain of sweet clover which they grow. If the beekeeper will arrange for having seed of several strains which do not bloom at the same time he can increase his honey crop very materially. The early blooming strain of biennial white sweet clover commonly known as Grundy County sweet clover blossoms some days ahead of the common white sweet clover. The new late yellow sweet clover know as Redfield sweet clover blooms later and continues until frost. If all three are planted in the same locality the bees are likely to find a honeyflow lasting from June until frost, a period of nearly three months in favored places. With that kind of flow it is not surprising that large average yields are secured.

To secure this result someone must take sufficient interest to secure the variety in planting as otherwise all the seed planted by the farmers of the neighborhood is likely to be all of one kind.

Beside those mentioned it is well to add the annual or Hubam sweet clover and the early blooming yellow variety.

What Is a Colony of Bees?

Many who are unfamiliar with bees are now making a start and to them the problem of making the right beginning is not always easy. When they buy a hive of bees they do not know what to look for. In many cases what they do buy is well nigh worthless. If the hive contains combs and live bees it may seem to come within the requirements for a colony of bees. A poor hive with crooked combs, black bees which may be queenless and a little if any stores may not be worth moving, whereas a good hive with straight combs, Italian bees with ample stores and abundant brood may be cheap at ten dollars. The novice should not buy unless he has competent advice about what he is getting or buys from some one who can be trusted to give value for his money.

Wind Protections

In early spring one of the most important things for the apiary is a situation protected from wind. Young brood requires a high temperature and much loss results at this reason from chilling of the brood when cold winds follow balmy days. This necessity was among the first things to be discovered by men when they began keeping bees. More than two thousand years ago Virgil wrote:

First for thy bees a quiet station find
And lodge them under covert of the wind
For winds, when homeward they return, will drive
The loaded carriers from their ev'ning hive.

He further advised planting wild olive trees and palms for a windbreak. Even in the warm parts of our own country like southern Arizona and California windbreaks are important for early spring protection.

Build for the Future

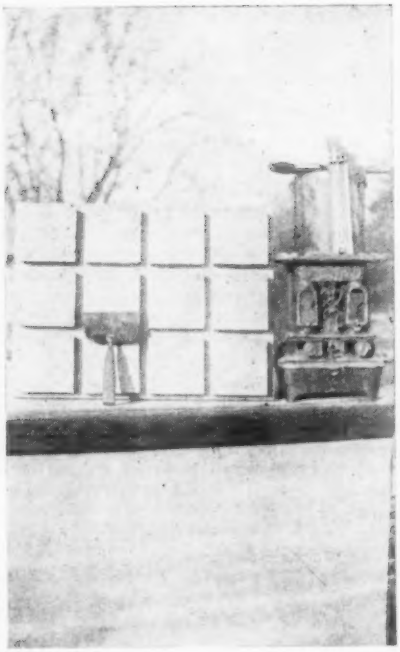
As we go to press the country is still lacking in moisture. Dust storms are sweeping periodically over the plains territories and immediate prospects for the honey season are anything but rosy.

Such are the seasons that test whether we have the proper optimism for a full fledged beekeeper. It is in the agricultural pursuits that things can look darkest, only to change overnight. Good rains, warm temperatures can change "from desert to bloom," and transform a puny colony into a honey producing asset. Care for your colonies now. Cover your combs. Fill your empty hives. Keep your plans for business expansion moving. When the other man get discouraged and falters is the time for the rest of us to bend to our oars.

Comb Honey -- Equipment and Honeyflow

By Chas. Kruse,
Illinois.

This is the second in the comb honey series by Mr. Kruse. Into the honeyflow we go!



Foundation fastening blocks; with plate, stove for heating plate and paraffin; thermometer for testing to 350 degrees and brush for applying.

LAST month, in our first article, we stressed the need to **be prepared,** especially in those things which make for strong colonies. We mentioned some of our equipment, the Miller false bottom, the need for abundant supers for comb honey in readiness for the flow which may come.

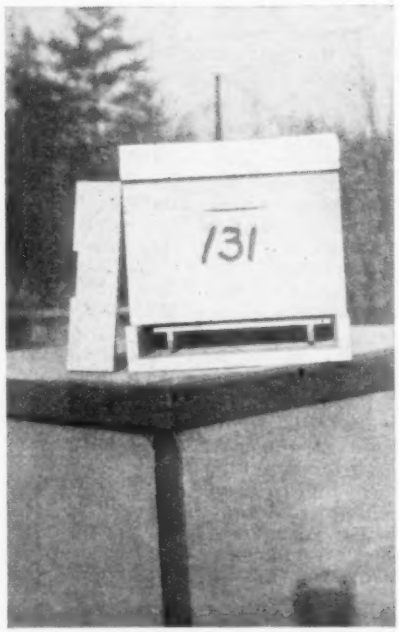
Then follow the anxious days of waiting for the honeyflow. You are probably familiar with the signs; the humidity is apparently right; the main crop bloom (clover, alfalfa, orange, sage, tupelo or what have you) is apparently on in full blast; but yet, **there is no flow.** Truly these are anxious days. Will the mysteries of the honeyflow ever be solved?

Then suddenly, for no apparent reason, the flow is on. Ah! that first super, given in feverish haste, will it need a successor?

Now we must cut down the two-story hives which have produced our big colonies. Pack the extra brood away on colonies not to be used for comb honey production, three or four stories high. We must work hard and fast to make every hour count.

The top story of the two-story hives, nine out of ten times, is left with the queen because almost always the top story has a clean compact brood nest. We take away only enough bees with the extra brood in the story removed to protect the brood. The top story is also the best one to remove because in our practice it has been cleaned of burr-comb before giving it. It makes it so easy to handle during a honeyflow.

As each colony is cut down to one hive body, it is given one or possibly



Eight-frame hive, showing false bottom and entrance closer. Cover is of metal, painted with aluminum.

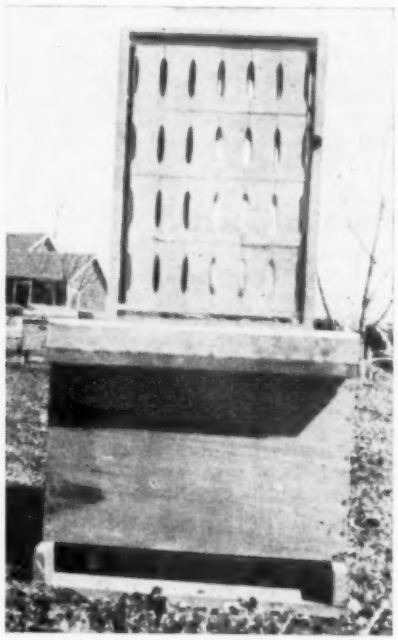
two comb honey supers. An exceptionally strong colony is given two supers.

The first comb honey super has bait sections; two clean drawn sections devoid of honey. It is a decided advantage to use bait sections in the first super. There may never be a successor to this super.

Should the flow continue after the first super is half filled, then the second one is given on top. No empty supers should be given except on top. Give the bees a chance to fasten the tender white foundation, which is so delectable and so finely fashioned for section honey.

For the expert comb honey producer, only No. 1 sections are used. Paraffin is put on top to keep them clean. It is heated to 350 degrees and applied with a three-inch brush. The picture shows all the tools necessary.

In this day of democracy, we are prone to believe that our system of doing things is the best one. The science of honey production should be our only guide in ascertaining the best possible system of comb honey production. **What we want and must have is beautiful, well filled sections, immaculately clean, and well packed; the buying public will do the rest.**



Modified Dadant hive with two-inch bottom board and false bottom. On top is our eight-frame T super which is used on all sizes of hives. The super is ventilated at the ends as well as at the sides.

Now, in our management we use the eight-frame hive with two division boards. We find that we get more brood with the outside protection the boards afford, without burr-combs to fasten the outside combs to the hive to spoil them. When a division board is removed, there is ample space for handling without putting your comb outside. All combs are accurately spaced one fourth inch.

The two-inch bottom board supplies ample ventilation and the false bottom keeps the bees from building down. These were shown in last month's issue. Our hives also have a thick cover, which keeps the bees cool in summer and warm in winter.

To keep them contented, that's the main thing during a honeyflow. Can't you hear that high pitched tone when the honeyflow is on? The gift of the gods is to serve, and the bees have it.

Make them comfortable. That's the thing. Our super is ventilated as you

will note by the description under the picture, and it coaxes the young bees away from the brood chamber. The air in the super and the hive is driven where the bees want it. You know how hard and how steadily they work to evaporate the water from their new found treasure. Why shouldn't we help them by giving them ample ventilation?

This super will also give the bees freedom. The sections in the four corners of it will be just as good as those in the center, bringing the crop into the fancy class. It increases the weight two or three pounds per case.

When the top super is being drawn out by the bees, should the flow continue, the top is placed on the bottom and the bottom super, which is now the oldest and nearest completion, is placed on top. The idea of this is to keep the sections white. A new super of sections may be added on the very top if there is promise of sufficient honeyflow.

Remember, if one of those sudden stops in the honeyflow occurs, it is not conducive to optimism: so go slowly and carefully with your supers. Crowd the bees, to be on the safe side and yet be courageous enough to take a chance. Honeyflows are a gamble anyway.

Swarming, that nightmare of all the uninitiated, also queen rearing for the comb honey producer, will be treated in our next article.

Definitions and Standards for Food Products

The following definitions and standards for food products have been adopted as a guide for the officials of this department in enforcing the Food and Drugs Act. These definitions and standards include those published in S. R. A., F. D. 2, revision 3, and those adopted May 12, 1933.

Henry A. Wallace, Secretary of Agriculture, Washington, D. C., August 1, 1933.

Honey.

1. Honey is the nectar and saccharine exudations of plants gathered, modified, and stored in the comb by honeybees **(Apis mellifica and A. dorsata)**, is levorotatory, and contains not more than twenty-five per cent of water, not more than 0.25 per cent of ash, and not more than eight per cent of sucrose.

2. Comb honey is honey contained in the cells of comb.

3. Extracted honey is honey which has been separated from the uncrushed comb by centrifugal force or gravity.

4. Strained honey is honey removed from the crushed comb by straining or other means.

Taken from page 123, March, 1934, Food Industries.

What Does "Clarify" Mean?

I have read the interesting articles on the subject of clarifying honey. I am only a small beekeeper producing less than two tons of honey annually, but I would be glad to adopt any method promoting its use and sale provided it did not affect the food value or mislead the public.

As long as we have no certain knowledge that the clarifying process does not affect the mineral content, I say we should hesitate about using it until we are sure it does not. The mineral elements of food are most valuable and absolutely necessary to a proper nutritional balance. We should jealously guard against any process which refines them out of our food products.

Personally I think the public knows what it wants, but it doesn't always know that it's not getting it when it buys certain merchandise. In other words, I believe in selling honey for its wholesomeness and not solely for taste and appearance.

The time will come when the purveyors of farm honey will have to defend themselves against all those beekeepers who prefer to sell pure honey and will advertise it as such; but the industry will have suffered immeasurably because of the suspicion of honey sowed in the public mind.

Geo. L. Abeler,
Minnesota.

Music and Bees

By Albert Downing,
Canada.

Albert Downing is a singer, leader in a choral society, and to him bee-keeping is a part of the poetry of life.

A well known poet says: "If music be the food of love, play on!" The hum of the honeybee; the joyful return of the bee to the hive loaded with nectar; the note of anticipation sounded when the honeybee leaves the alighting board to soar aloft in its quest for flowers waiting for its visit; the thousand and one sounds, in and out of the hive are all music —to the beekeeper.

In my business as a professional musician, conductor of a choral society, and a singer, I can truly say that the training of singers, the understanding of vocal organs, the right application of sound and breath control and interpretation is something one must love in order to be successful. You must have the instrument, then the instinct and ability to train yourself to operate it whether your subject be vocal or instrumental music. With me, music has developed from a hobby to a profession. Beekeeping is still a hobby, but ever since I can remember, I have learned many lessons, received many wonderful inspirations in the activities of the honeybee. As a boy I often turned a skep upside down to ascertain its condition, and later to execute a marathon down the garden for my trouble. Every sting served as inoculation to get me in condition for the real job of beekeeping later.

So now in winter I am a singer and in summer I am a beekeeper. My chief interest is a love of the beautiful things nature has sent to all mankind; the birds, the flowers, the bees. I sing of them; in my music I try to interpret the blessings God has sent.

Every beekeeper should treasure the wonderful things around him. He should see the hand of the supreme being; in adversity he should learn to be thankful; in success, grateful. When we beekeepers learn to appreciate these things and the great army of experienced people who give of their talent and experience to help us, then we shall be joining the ranks of the real.

The eight-frame Quinby hive from which the old style Dadant hive was originated.

A Russian's Comment on Langstroth and Dadant Hives

By V. Raykovsky,
Russia.

I READ with satisfaction the editorial in the American Bee Journal for 1933, page 382, under the title "Scrap the deep comb hive," giving a true idea of how we should appreciate the hives and especially concerning such good hives as the Langstroth and the Dadant.

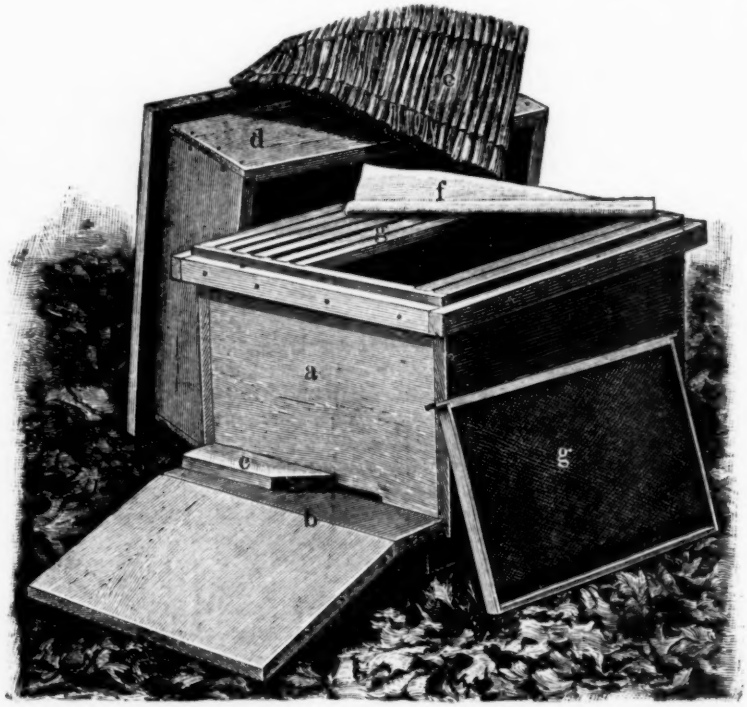
Having worked with both of these systems of hives, I find them both satisfactory but they require different methods of management. In practice, the preference for one of these styles over the other depends somewhat upon the methods of management than upon other serious reasons; and it is not astonishing, for habits predominate and one often secures more results in spite of the reasonable conceptions of the spirit.

It is enough to say that these two systems permit the beekeeper to accomplish with success the most difficult operations during the season—developing the colonies in the spring to the enormous strength needed for a good crop of honey—utilizing this strength at will either for the harvest of honey or for the increase of the number of colonies without giving them the desire to swarm—renewing the queens by the most simple and natural methods—permitting a single man to manage a large apiary, or several placed in different locations—wintering the bees in cellars or out-of-doors even in the coldest climates, provided the walls of the hives be not less than forty to fifty millimeters and the apiary well protected from cold north winds — harvesting good honey in the most salable shape, and so on.

All this is possible with both styles of hives. But I find that the Dadant differs from the Langstroth in an essential point: **It is easier to handle and more natural for the life of the bees.** The two stories needed with the Langstroth hive for the brood chamber in the spring, instead of the single one in the Dadant hive, the necessity of using perforated zinc in some instances, the food chamber which has become indispensable with the Langstroth hive, all this makes the Langstroth hive much more complicated than the Dadant and causes the work also to be more complicated, in the management of a large apiary. The bees are more comfortable in the Dadant than in the Langstroth and it presents more harmony to the beekeeper.

In addition, I find that the Dadant has a choice in its construction in the length of the frames. They are longer than those of the Langstroth by about four centimeters, and it is a prolific idea of Charles Dadant; for the bees love to concentrate their winter stores, not only in the height but also in the length, especially in the part opposite the entrance where they can reach them by slightly moving their cluster, without disturbing their winter arrangement.

If the Langstroth hive had been made with a greater depth of comb, of 10 or 12 centimeters there would probably be no need of a food chamber which would require the bees to move upwards. The other arrangement is more satisfactory for both the bees and the apiarist. The length of the combs permits the bees to stay more commodiously upon them under the ceiling where they can concentrate the heat of the group. The two stories compel them to keep them-



Old style Dadant hive as used in the Dadant apiaries: (a) hive body; (b) bottom board; (c) entrance reducer and closer; (d) telescope cover; (e) straw mat; (f) oilcloth; (g) frames.

selves at a comparatively greater distance from the top, leaving a greater distance to keep warm.

I do not mean to say that it would be more profitable to transfer all the Langstroth hives into the other kind, but I maintain that the idea of Charles Dadant is correct and gives the colony a great advantage. The deepening and lengthening of the combs settles one of the worst problems of beekeeping in winter for the provisioning of bees. The idea is of more importance than many people believe and I am of the opinion that the ideas of Charles Dadant will sooner or later be appreciated and understood throughout the beekeeping world.

[The Dadant hive was originally called the Quinby hive, for the eight-frame Quinby hive was described by Moses Quinby in a book entitled "Mysteries of Beekeeping Explained," edition of 1866. Charles Dadant adopted this hive at that time and improved it by increasing the number of frames from 8 to 11, usually with a division board leaving only room for ten frames. But Quinby ceased using this hive to turn to a closed-end frame hive which was later recommended in his book "Quinby's New Beekeeping."

The Dadants have kept on with the Quinby hive and later shortened the length of the frames to permit its being used with Langstroth hives, the latter being used as supers. But our correspondent is correct in recommending the longer frames for they are really beneficial. We still use the regular Dadant-Quinby hive but the shorter hive is used by many people under the name of Modified Dadant or Dadant-Blatt hive.—Editor.]

Preparing Granulated Honey for Exhibition

We find that we can bring about a very prompt granulation of clover honey merely by adding a small percentage of last year's granulated honey. This is warmed to a flowing stage and let run into the extractor while the extracting of new honey is in operation. This process can also be aided by a frequent change of temperature of the honey after it has been extracted.

Of course, the date of the fair is of considerable importance. We can ordinarily begin extracting here July 15 or thereabouts, and three weeks later we should have a very well advanced stage of granulation. When we keep our surplus stock under favorable cool conditions we have no trouble about last year's honey returning to liquid. All this refers to clover honey only.

J. H. Sturdevant,
Nebraska.

League President J. W. Newton

Newton's picture was not here last month in time to go with the other officers of the Institute and League. It was promised for this issue and here it is. He is well known as a member of Louisiana Southern Bee Farm at Baton Rouge.

A New Outlet for Honey

A new outlet for orange blossom honey has been found in Los Angeles by the Adohr Milk Farms, the largest independent dairy and creamery in southern California. This new product is sold under the trade name, "Honycreme." It is 60 per cent rich cream and 40 per cent honey. The cream used is extracted with the new type of extractor which turns out cream with 80 per cent butter fat, as great a percentage as is found in butter itself.

The honey and cream spread is highly recommended by Los Angeles physicians when it is necessary to build up the carbohydrates in the diet. At the present time about 50 per cent of the sales are for children's diets and 50 per cent for those of adults. The fact that honey is more easily assimilated than other sweets makes it popular. The delightful flavor causes it to find favor with children. Orange blossom honey has a particularly delicate flavor.

Honycreme has a consistency of medium soft butter. It is sold in half pint bottles from milk wagons, and the price is twenty cents for the half pint. The bottle has an extra wide neck like that which is used for sour cream. Honycreme may be kept indefinitely in artificial refrigeration.

J. Edwin Tufft,
California.

Garden Flowers in Color

"Garden Flowers in Color" is the title of the most beautiful garden book which has yet come to our attention. Every beekeeper is more or less interested in flowers because they are the source of the nectar from which the honey comes. This book deals only with garden flowers and is most unique in that on every page there is from one to three pictures in the natural colors.

You need not be familiar with the names of plants in order to enjoy this book because the pictures enable you to recognize and name the flower at once. Four hundred and sixty-nine different kinds of plants commonly grown in American gardens are thus illustrated in this wonderful volume of 320 pages. The descriptions are necessarily brief but enough is told about each plant to enable the reader to know its special requirements and to decide whether it is the thing to grow in his particular garden.

For a book so fully illustrated the price is low, $3.75, and it may be obtained from the publishers, the MacMillan Company, Fifth Avenue, New York City.

Famous Sayings --"Bees Gorged With Honey Never Volunteer An Attack"

It would be rather difficult to tell who was the discoverer of this fact, one of the corner stones of modern beekeeping. The venturesome early man who fired a bee tree to bring it down and then noticed the actions of the insects in filling their sacs with honey would probably get the credit. Mention is made in early manuscript of the famous beekeepers of Hymettus protecting themselves with smoke from linen rags while working with their bees.

This axiom first came to attention in America in those two great classics of beekeeping literature, "Langstroth on the Hive and Honeybee," and Quinby's "Mysteries of Beekeeping Explained."

Father Langstroth listed it as number one in the first principles of beekeeping which he says "ought to be familiar to the apiarian as the letters of his alphabet."

Stanton Smith,
Ohio.

[Through error, we failed to get this splendid answer to the January "Sayings" with the others. We have apologized to Mr. Smith.—Editor.]

The Analysis of the Water Content of Honey By Use of the Refractometer*

By Ellis I. Fulmer, Wouter Bosch,
O. W. Park and J. H. Buchanan.

Many have asked how the refractometer is used to determine moisture content. Here is the method.

IN a previous communication by the authors a method was outlined for the control of granulation of natural honeys and it was stated that the moisture content was determined quickly by means of the use of the Abbe refractometer; a method replacing the usual long and tedious one of drying the samples on sand in a vacuum. The present communication presents data on the refractive indices of honeys together with tables permitting the rapid calculation of the moisture content from the refractive indices.

The refractive index of a solution depends upon three factors: the kinds of materials in solution, their concentrations and the temperature. The first determination of the refractive indices of cane sugar solutions were made by Strohmer (1884) and since that time many studies have been made on solutions of various sugars leading to the use of the refractometer as a means of analysis of such solutions. The Tables of Schonrock (1911) showing the relation of concentration of sucrose to refractive index are those given in the Official Methods of the Association of Agricultural Chemists and will be used as the Standard of reference in our subsequent discussions.

Auerbach and Borries (1922) prepared synthetic honeys (solutions of invert sugar) and studied the effect of temperature upon the refractive index. They found that the refractive index decreased 0.00025 for each degree (Centigrade) rise in temperature. The same authors (1924a) determined the refractive indices of several synthetic honeys and correlated these values with the moisture contents as determined by a vacuum drying method. An analysis of their results shows that the moisture contents of their honeys as read from the synthetic honey refractive index curve is uniformly 1.7 per cent lower than those which would be obtained by the use of the Schonrock sugar table. In the same year (1924a) they determined the moisture contents and refractive indices of some thirty European honeys and derived equations showing the relation between the moisture content and refractive index. These values are also 1.7 per cent below those which would be calculated from the Schonrock tables. This deviation is due to two causes or combination of them; there are materials in honey, other than sugars, influencing the refractive index; the vacuum drying method used does not give the true water content due to incomplete removal. Sheppard, Finlay and Roberts (1923) employed the Abbe refractometer for the determination of dissolved solids and the specific gravities of various honeys. Park (1929) used the refractometer in the determination of the sugar content of nectars.

Marvin and Wilson (1931) (1932) determined the water content of honey samples by the gravimetric method and the refractometer. They used sand, small glass plates, uniform pieces of blotting paper and thin pieces of asbestos for the dispersion of the honey in the vacuum drying method. They calculated the moisture content from refractometer readings by means of the tables of Schonrock for the derivation of the water content of sugar solutions. The results of the gavimetric method were 1.4 to 3.0% lower than those obtained by the values calculated from the refractive index. The glass plate method gave the lowest results, whereas the values obtained by the use of the blotting paper and asbestos sheets were somewhat higher. Marvin (1933) published tables correlating the weight per gallon of honey and refractive index.

Chataway (1932) determined the refractive indices of sixty honeys. The water content was determined by the Official Method of the Association of Agricultural Chemists, involving vacuum-drying on quartz sand. He states: "Unfortunately the only tables available for the conversion of the refractive index readings into per cent moisture have been those found in the sugar handbooks. When applied to honeys those give results which are nearly two per cent too high in moisture, in all probability because the refractive indices of cane sugar and of invert sugar differ considerably. As a result, the value of the refractometric method has been unduly discredited, in addition to the fact that its general use has been discouraged by considerations of expense" (for the refractometer). This difference between the refractive indices of pure sucrose solutions and of solutions of invert sugar were noted above in the discussion of the work of Auerbach and Borries (1922).

Chataway gives tables relating the refractive index of honey at 25° Centigrade and the water content as determined by the vacuum drying method employed by him. He found the refractive index of honey to decrease 0.00023 per degree rise in temperature so that the value read at any other temperature can be corrected to the base 20° C. He also notes that his values are "in almost theoretical agreement with those obtained by Auerbach and Borries." As previously noted these values are about 1.7 per cent below those obtained from the sugar curve and practically identical with those obtained for invert sugar.

In view of this difference between the values for sugar solutions and for honey it seemed advisable to find whether the vacuum drying method might be so modified as to give somewhat higher values for water content than those obtained by the methods used by the above workers. The method finally adopted is as follows:

> An aluminum flat-bottomed dish containing 30 g. of sea sand, and a small glass rod were dried to constant weight at 65° C. in a vacuum of 27-28 inches. Then 5 g. of honey were mixed very thoroughly with the sand with the application of sufficient heat to ensure the mixing. The dish and contents were then vacuum dried under the same conditions as before outlined. The time required to reach constant weight was 15-25 hours. By this method it was possible to obtain weights which checked to within two milligrams.

*Journal Paper No. J154 of the Iowa Agricultural Experiment Station, Ames, Iowa. Project No. 355.

TABLE I.

Water content of different honey samples as determined by the vacuum drying method and refractive indices as determined by means of the Abbe refractometer, at 20° C.

Predominant Floral Source 1.	Water Content Vacuum Drying Method 2.	Refractive Index 3.	Water Content from Graph 4.	Difference between 4 and 2 5.
1. Catsclaw	13.9%	1.5035	13.8	minus 0.1
2. Alfalfa	14.2%	1.5030	14.0	minus 0.2
3. Sweet Clover	14.2%	1.5030	14.0	minus 0.2
4. Mesquite	14.3%	1.5020	14.4	plus 0.1
5. Bitterweed	15.3%	1.5005	15.0	minus 0.3
6. Basswood	15.4%	1.4995	15.4	0.
7. Sweet Clover	15.8%	1.4986	15.8	0.
8. Tupelo	15.8%	1.4984	15.8	0.
9. Holly	16.0%	1.4975	16.2	plus 0.2
10. Fire weed	16.3%	1.4968	16.5	plus 0.2
11. Orange	16.5%	1.4958	16.9	plus 0.4
12. Cotton	16.7%	1.4966	16.6	minus 0.1
13. Sage	16.9%	1.4959	17.2	plus 0.3
14. Buckwheat	17.2%	1.4967	16.5	minus 0.7
15. White Clover	17.4%	1.4941	17.6	plus 0.2
16. Heartsease and Spanish Needle	17.6%	1.4939	17.6	0.
17. Heartsease	17.6%	1.4930	18.0	plus 0.4
18. Sweet Clover	17.6%	1.4940	17.6	0.
19. Sourwood	17.7%	1.4942	17.5	minus 0.2
20. Eucalyptus	18.2%	1.4920	18.4	plus 0.2
21. Fire weed	18.6%	1.4904	19.0	plus 0.4
22. Palmetto	18.8%	1.4918	18.5	minus 0.3
23. Dandelion	20.0%	1.4880	20.0	0.
24. Gallberry	20.5%	1.4866	20.6	plus 0.1
25. Goldenrod	20.6%	1.4857	20.9	minus 0.3

TABLE II.

Data for the derivation of the water content of American honeys from the refractive indices as determined by means of the Abbe refractometer at 20° C.

Refractive Index 20° C.	Water Content	Refractive Index 20° C.	Water Content
1.4855	21.0%	1.4970	16.4%
1.4860	20.8%	1.4975	16.2%
1.4865	20.6%	1.4980	16.0%
1.4870	20.4%	1.4985	15.8%
1.4875	20.2%	1.4990	15.6%
1.4880	20.0%	1.4995	15.4%
1.4885	19.8%	1.5000	15.2%
1.4890	19.6%	1.5005	15.0%
1.4895	19.4%	1.5010	14.8%
1.4900	19.2%	1.5015	14.6%
1.4905	19.0%	1.5020	14.4%
1.4910	18.8%	1.5025	14.2%
1.4915	18.6%	1.5030	14.0%
1.4920	18.4%	1.5035	13.8%
1.4925	18.2%	1.5040	13.6%
1.4930	18.0%	1.5045	13.4%
1.4935	17.8%	1.5050	13.2%
1.4940	17.6%	1.5055	13.0%
1.4945	17.4%	1.5060	12.8%
1.4950	17.2%	1.5065	12.6%
1.4955	17.0%	1.5070	12.4%
1.4960	16.8%	1.5075	12.2%
1.4965	16.6%	1.5080	12.0%

The refractive indices were determined on the undiluted honey with the Abbe refractometer at 20° C.

In Table I are given the values for the water contents of twenty-six honeys together with the values of the refractive indices. In the fourth column are given values as calculated from the relation: per cent water equals 400 (1.5380—refractive index of the honey). These values are one per cent below those obtained by the use of the Schonrock sugar table or 0.7 per cent higher than those obtained by previous workers. Whether this value can be raised by further development in analytical methods is problematical.

In column five are given the differences between the calculated values and those determined by the vacuum drying method. The greatest deviation is shown by the buckwheat honey with a deviation of 0.7 per cent. Chataway also notes this abnormal behavior for buckwheat honeys. This honey is very dark in color which fact probably accounts, for the most part, for this phenomenon. Six of the honeys show no deviation, four show 0.1 per cent, seven show 0.2 per cent, four show .3 per cent and three show 0.4 per cent deviation. The average deviation for all the honeys is 0.16 per cent, the value being 0.12 per cent if the case of the buckwheat is excluded. Considering the variation in the honey types and the errors inherent in the vacuum-drying method the agreement is entirely satisfactory. On the basis of these relationships Table II has been prepared by means of which the water content of a honey may be read from a knowledge of the refractive index at 20° C. As noted previously, Auerbach and Borries found the refractive index of invert sugar solution, through the concentration range for honey, to decrease 0.00025 per degree rise in temperature Centigrade, while the value found by Chataway to apply to honey is 0.00023. This latter value has been checked by us for several honeys and our results are in close agreement with this figure. Hence, for each degree above 20° C. there should be subtracted 0.00023 from the refractometric reading, which will give the value to use in Table II.

Literature Cited.

Fr. Auerbach and G. Borries, 1922, Z. Nahr. Genussm. **43**,297.

Fr. Auerbach, and G. Borries, 1924a, Z. Nahr. Genussm. **47**,177.

Fr. Auerbach and G. Borries, 1924b, Z. Nahr. Genussm. **48**,272.

H. D. Chataway, Canadian J. Research, **6**,532.

E. I. Fulmer, Wouter Bosch, O. W. Park, and J. H. Buchanan, 1934, This Journal, January, p. 12.

G. E. Marvin, 1933, This Journal, November, 426.

G. E. Marvin and H. F. Wilson, 1931, J. Econ., Ent. **24**,603.

G. E. Marvin and H. F. Wilson, 1932, J. Econ. Ent., **25**,514.

O. W. Park, 1929, J. Econ. Ent., **22**, 534-44.

Schonrock, 1911, Z. Verein, deottschen Zuckerind., **61**,II,421, (International Critical Tables, **2**,339).

W. J. Sheppard, A. W. Finlay and J. F. Roberts, 1923. British Columbia Dept. Agr. Bull. **92**.

Strohmer, 1884, Z. Rubenzuckerind., **34**, 562 (From Auerbach and Borries, 1922).

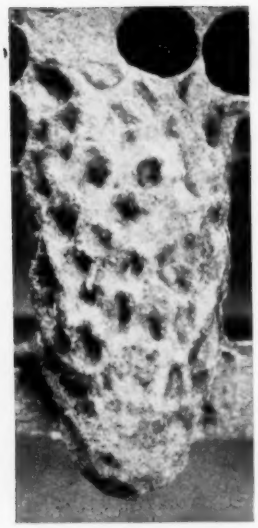
Boost the Clovers on Contracted Land

Build up soil fertility and encourage the putting out of clovers or nectar bearing crops for the bees. Remember the use of contracted corn land permits the owner to seed down the land to permanent pasture, to be ready to pasture it in 1935. He can prevent erosion by sowing such deep rooted plants as sweet clover to control soil washing.

Although he is said to be restricted from taking anything in the form of forage, pasturage or seed crop off contracted or government rented acreage, we know of no successful way of keeping bees out of these fields. Farmers should be encouraged to put out bee pasture that does best in their locality, according to the soil requirements. This rental program gives the farmer a chance to do the kind of soil building most of them have wanted to do for a long time but have not been able to because they felt they could not lose income from the land. Beekeepers at least should keep their contracted acreage in legume crops and aid their bees at the same time. If you have no acreage, furnish seed to your neighbors and encourage them to use it.

Now is the time to act on this matter.

Jas. E. Starkey,
(Ind. Assoc. Letter, Mar 1.)



Capped Cells in Nuclei Need No Protection

By J. F. Diemer,
Missouri

IN taking observations and conducting experiments in an effort to discover why so many virgins were missing, great care was exercised in determining whether the capped cells were destroyed before the virgins emerged or whether the virgins were killed by the bees after emerging. It seemed certain that either one or the other cause was responsible for the disappearance of so many virgins just when queens were badly needed. As I knew that cells are never destroyed in cell building colonies, I was considerably interested in determining whether or not it was possible for nuclei with many less bees to do me such a trick. It was a plain case that, if they did, there was something deeply hidden from our view that was not hidden in full colonies. When a colony was preparing to swarm and built a large number of cells, when the last swarm had issued and the virgins had destroyed the surplus cells, the worker bees would remove the dead virgins and swarming would cease. I decided to install a number of cells and to keep close watch.

Twenty nuclei were made queenless and ripe cells were installed at the same time. I reasoned that if bees ever destroy cells it would be the ones deprived of their laying queen at the time the cells were put in. Several observations were made the first day. Except for the bees fastening the cells to the combs and clustering over the cells, nothing happened. The second day when, according to my dates, the virgins were to emerge, closer and more frequent observations were necessary. All the nuclei were examined, but the only noticeable change was a little excitement among the bees clustering over the cells. From this time forth all my attention was centered on these cells. Not a one had been torn down and there was no indication that any would be. Judging from the actions of the bees, it seemed likely that the virgins on the inside of the cells were stirring around. At least, they were attracting the attention of the bees. About noon I found a virgin that had cut a hole in the end of her cell. In a few minutes she emerged and crawled up the outside, the bees following her, pinching her or taking hold of the leg or wing in what seemed to me an angry mood.

In order to see what was going on in the other nuclei, this one was closed and each of the others examined. I found that some of the virgins had already emerged and were treated like the first one. Others were still in their cells.

No other examinations were made until the third day when all the virgins were missing except one, and she had been badly disfigured. However, she was still alive. Her late enemies seemed a little sorry for what they had done to her and seemed to be trying to make amends. I killed this virgin because she had two legs broken and her wings looked about like a string.

I tried several other experiments. Cells were given to nuclei all the way from two to ten days after being made queenless. I found that virgins emerging from cells given on the second and third days were either killed or badly crippled. Those given the fourth day emerged, and most of them were accepted by their workers with only a few killed.Those given the fifth day were all accepted. From the fifth day until the tenth, all cells were successfully introduced and judging from outside appearances, the queens were of a better quality after they began to lay eggs.

While many other experiments were carried out, this one is given preference because it seems to be the most easily understood. The only reason for conducting these experiments in nuclei was that not only all queen breeders but the writers of books and articles in bee magazines were agreed to a man that, while bees would not destroy capped cells in cell building colonies, if cells were given to nuclei, many of them would be destroyed by the bees before the virgins emerged.

It was also asserted that the bees, when destroying cells, would open them at the side. Neither of these assertions can be substantiated as these experiments have proved. **The fact is that capped cells are never destroyed by the bees before the virgins have emerged.** Bees will destroy cells when the inmate is dead by puncturing the ends the same as they do with diseased brood.

Thus it is seen that no protection is possible for cells and that none is needed. However, protection for the virgins would be possible but probably would not pay as there are better ways to do this. It seems that nature has made laws governing the bees in the hive, the queen in the air, activities in construction and destruction, the care and protection of cells that are never in any way violated. There is no law known to history that is more exacting or more rigorously obeyed. This is one of the beauty spots in beekeeping, one that we can all understand and enjoy.

Book of Formulas

A copy of Henley's "Twentieth Century Formulas" has reached the editorial desk. It contains more than 800 pages, recipes, formulas and processes. It contains an amazing amount of information on a wide variety of subjects. If you want to make dye there are many pages of information as to just what to use for various colors for particular purposes. If it is a photographic process that you want there it is ready at hand. Polishes, soaps, bleaches, fly papers, enamel, a thousand things of common use. Ten thousand such formulas are included in this book which is bound in serviceable cloth and sells at $4. It may be secured from the Norman W. Henley Co., New York City.

Addition to March Sayings--"Eat Thou Honey Because It Is Good"

M. I. Taylor, Richmond, Virginia: "In the time of King Solomon, people were agriculturists. The bare necessities of life were harder to secure, but the amount of honey consumed was limited by the quantity at hand rather than by demand.

"In our modern scheme the relative importance of honey has been challenged and has given way to numerous sweets.

"That honey is 'health to the bones' is an excellent food, builds bodies and is quickly changed into energy should be the theme of our advertising."

A Method of Examining Honey Based on Bouquet Flavor and Color

By Dr. A. O. Blackhurst,
England.

I HAVE been associated with expert tasters in teas, coffees, cognacs and wines for a number of years, and I have always felt the honey producer is at a disadvantage because of the method generally adopted when his product is being tested. It is impossible to appreciate all the wonderful bouquet and flavor combinations present in honey by simply taking a small sample on the tongue, rolling it around and expectorating it.

When selecting honey for mead and wine manufacture, we decided to test samples by the usual methods practiced in the wine trade and in so doing were pleasantly surprised at the revealing of many delightful bouquets and flavors which are more or less masked when honey is undiluted. Not only was classification easier, but it was generally constant (by that I mean our conclusions would agree for the same samples on consecutive days), and we could deal with sixty samples in three days.

We took fifty or sixty samples and filled the sample glasses (shown in the diagram) up to the lower mark—one person filling the glasses in order, beginning with No. 1. By the time the last one was filled, No. 1 had had time to "stretch" and warm water at 100 degrees F. was added. The honey and water were then mixed with a glass rod, and care was taken to notice whether the mixing was quickly or slowly accomplished. The contents was frequently "nosed" until the mixing was completed. This process was repeated until the last sample was reached; but it must be emphasized that the water is added only to the sample which is going to be examined, because during the mixing of the water and honey, various characteristics of a sample will be revealed. If all the samples were watered at the same time, it would be impossible to examine them quickly enough.

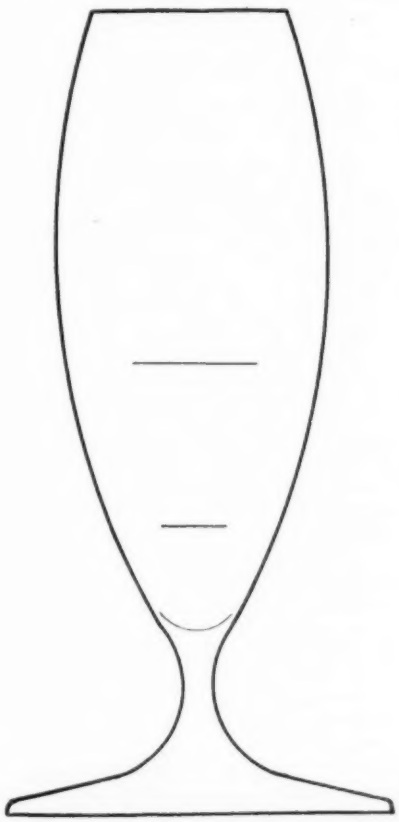


Diagram of dock glass for honey sampling.

The third phase consisted of gently swinging the glass around in the hands and "nosing" at very short intervals, mentally classifying the contents and placing the glass behind or in front of its previous position on the bench according to merit. All poor samples that were rejected were given another quick "nose" to see that none had been unfairly dealt with.

We then carefully went over the good samples and made notes on color and brilliancy, frequently "nosing" until one, two, three or four were selected and these arranged in order of merit. We used THE NOSE ONLY as, once the taste buds have been excited, the sense of smell is impaired. Once a sample has been swallowed, only one other or at the most, two others can be fairly judged for the next twelve hours at least. We then tasted the first of the best samples by taking a fair quantity of it on the tongue and immediately expectorating, measuring the flavor by the small quantity that remained in the mouth. The second, third and fourth samples were likewise treated; and finally the original undiluted sample of the best honey was tasted to confirm judgment arrived at by these methods. That was sufficient for one day. The next day the same procedure was followed.

If the records are found to agree fairly closely, the final selection may be made on the third day but if not, the processes must all be repeated until the results are counted and the "judge" properly educated to his samples and not the samples educated to the judge. The final day was devoted to careful classification of all the good samples first and then the rejected samples were examined to try to find out the reason why they were in that class. Our final test was a mouthful of the first and second honeys spread on thickly buttered cream crackers, and we found it a very necessary part of our program that our taste should confirm the selection made by the nose.

A New Bulletin

"Economic Aspects of the Bee Industry" is the title of a new bulletin recently issued by the University of California at Berkeley. It is by Edwin C. Voorhies, Frank E. Tood and J. K. Galbraith. This is a very comprehensive publication of 116 pages which is worthy of careful study by every commercial honey producer.

A careful study is made of the various factors influencing honey production as a business, including the different types of beekeepers, the factors influencing the price of honey, competitors of American honey in foreign markets, and similar subjects. While it deals especially with California conditions there is much information of immediate interest and value to honey producers in other sections.

It is interesting to note that the leguminous forage plants such as alfalfa, sweet clover, alsike and white clover are the source of about sixty per cent of the total honey crop. Trees yield sixteen per cent and weeds eleven per cent. California honey comes principally from sages and wild buckwheat, alfalfa, orange and star thistle. Only a small part of the total comes from the hundreds of minor sources common to that state.

A useful table is included which tells the color, flavor and natural blends of honey from different sources, along with the use, commercial importance and area of production for the United States and other countries.

Several pages are devoted to a study of the production and marketing of beeswax and to queen and package production. This bulletin is an important contribution to the literature of beekeeping and deals with the economic side which has too long been overlooked. We suggest that readers interested write at once to the University of California, Berkeley, California, and ask for a copy.

Most Bee Men Agree

"I would rather have 160 colonies of bees, equipped for honey production, than to own a 160-acre farm outright, with all the equipment necessary for farming. Under present conditions, I can come much nearer making a living from the bees."

S. A. Tyler.
Illinois.

Water Content and Weight Per Gallon Of Honey

By G. E. Marvin, Assistant Apiculturist,
Bureau of Entomology,
U. S. Department of Agriculture.

EQUIVALENT READINGS SHOWING REFRACTIVE INDEX, WEIGHT PER GALLON, AND WATER CONTENT OF HONEY AT 68° F. (20° C.)

Refractive index	Weight per gallon	Water content	Refractive index	Weight per gallon	Water content	Refractive index	Weight per gallon	Water content
	Pounds	%		Pounds	%		Pounds	%
1.5033	12.054	13.3	1.4954	11.884	16.4	1.4876	11.717	19.6
1.5030	12.048	13.4	1.4951	11.878	16.5	1.4873	11.712	19.7
1.5028	12.043	13.5	1.4949	11.873	16.6	1.4871	11.706	19.8
1.5025	12.037	13.6	1.4946	11.867	16.7	1.4868	11.701	19.9
1.5022	12.031	13.7	1.4943	11.862	16.8	1.4865	11.695	20.0
1.5020	12.025	13.8	1.4941	11.856	16.9	1.4863	11.690	20.1
1.5017	12.020	13.9	1.4938	11.850	17.0	1.4860	11.685	20.2
1.5015	12.014	14.0	1.4935	11.845	17.2	1.4858	11.679	20.4
1.5012	12.008	14.1	1.4933	11.839	17.3	1.4855	11.674	20.5
1.5009	12.003	14.2	1.4930	11.834	17.4	1.4853	11.668	20.6
1.5007	11.997	14.3	1.4927	11.828	17.5	1.4850	11.663	20.7
1.5004	11.991	14.4	1.4925	11.823	17.6	1.4848	11.657	20.8
1.5001	11.986	14.5	1.4922	11.817	17.7	1.4845	11.652	20.9
1.4999	11.980	14.6	1.4919	11.811	17.8	1.4843	11.647	21.0
1.4996	11.974	14.7	1.4917	11.806	17.9	1.4840	11.641	21.2
1.4993	11.969	14.8	1.4914	11.801	18.0	1.4838	11.635	21.3
1.4991	11.963	14.9	1.4912	11.795	18.1	1.4835	11.630	21.4
1.4988	11.957	15.1	1.4909	11.789	18.2	1.4832	11.625	21.5
1.4985	11.951	15.2	1.4906	11.784	18.3	1.4830	11.619	21.6
1.4983	11.946	15.3	1.4904	11.779	18.4	1.4827	11.613	21.7
1.4980	11.940	15.4	1.4901	11.773	18.5	1.4825	11.608	21.8
1.4978	11.934	15.5	1.4898	11.767	18.6	1.4822	11.603	21.9
1.4975	11.929	15.6	1.4896	11.762	18.7	1.4820	11.597	22.0
1.4972	11.923	15.7	1.4893	11.756	18.8			
1.4970	11.918	15.8	1.4891	11.751	18.9			
1.4967	11.912	15.9	1.4888	11.745	19.0			
1.4964	11.906	16.0	1.4886	11.739	19.1			
1.4962	11.901	16.1	1.4883	11.734	19.2			
1.4959	11.895	16.2	1.4881	11.728	19.3			
1.4956	11.890	16.3	1.4878	11.723	19.5			

IN a recent article in this journal* investigators at the Iowa Experiment Station suggested the possibility of preventing honey from granulating by increasing its moisture content, but stated that the moisture content should not exceed 20 to 21 per cent. Although these figures are well within the limits of the requirements for honey as given in the Federal pure food law, they do not meet the requirements of the United States grades.

Pure honey is sometimes found with a moisture content close to 25 per cent, and, because it is pure honey, it cannot be kept off the market. Honey with such a high water content, however, is not good honey, and it is for this reason that the United States grades specify that the minimum weight of honey shall be 11 pounds 12 ounces per gallon. Honey of this weight has a moisture content of 18.9 per cent. Any honey with a higher moisture content would require special processing, such as pasteurizing, to keep it in salable condition.

The accompanying table of equivalent readings showing the water content of honeys of different weights per gallon and refractive indices has been compiled from a curve in which the moisture content of several honeys, determined by the method of the Association of Official Agricultural Chemists, was plotted against their refractive indices. The weights per gallon equivalent to these refractive indices were taken from a table in a previous paper by the author.**

*Fulmer, E. I.; Bosch, W.; Park, O. W.; and Buchanan, J. H. Honey granulation controlled by new method. 1934. American Bee Journal. 74:12-14.

**Marvin, G. E. Methods for determining the weight per gallon of honey. 1933. American Bee Journal. 73:426-428.

F. R. Beuhne

The September issue of "Australian Bee Journal" was devoted to a memorial of F. R. Beuhne, long prominent in the apicultural affairs in Australia. As government apiarist of Victoria he became familiar to bee men throughout the English speaking world.

Mr. Beuhne was born in Germany in 1859 and spent his youth in a chemical works where he became an efficient and valued employee. Youth calls to far places and when he was twenty-one he went to Australia where for a time he dealt in poultry and dairy products at Northcote. Later he removed to Garfield where he engaged in poultry raising and beekeeping. In the bees he found his life interest and he again moved to Tooborac in search of more favorable bee pasture.

There he spent the remainder of his life, although often long absent on official business. Beuhne proved such a thorough student of beekeeping problems that when the government needed a man to serve the beekeepers he was selected. To the industry, as apiarist, and in connection with the association and the bee magazine he rendered invaluable service.

In addition to several bulletins and pamphlets, Mr. Beuhne was the author of two books which are widely known. One, "Beekeeping in Victoria," is a general manual of instruction, while the other, "The Honey Flora of Victoria," is a publication requiring long and careful preparation and special study of the flora of the region.

When the Australian Bee Journal was launched by the association in July, 1917, Mr. Beuhne was selected as editor with P. J. Markham as associate. A memorial to the man who was so long a leader in the industry in the form of a special issue of the magazine is most interesting and appropriate.

Red Clover Pollination

We have received from Moscow an extensive book on red clover pollination, published in the Russian language. The book contains more than 300 pages and indicates much careful research in its preparation. Unfortunately we are unable to understand the language and can only read the summary which is included.

Fifty-five experimental stations and one hundred eighty-eight plots in the principal areas where clover is grown have been organized and investigations are continued on a vast scale. Bumblebees appear to be regarded as of major importance in the pollination of red clover and there is under consideration a project to breed and distribute these insects.

The publication is the work of the All Union Scientific Research Institute on Beekeeping at Tula.

Plants Useful to Man

A convenient handbook of useful information about plants is "Plants Useful to Man" by Robbins and Ramalay, published by P. Blakiston's Son & Co., Philadelphia, Pa. The book contains 428 pages, and 241 illustrations covering the whole field of cultivated plants. It is not a book of cultural directions but a source of information concerning the history and uses of plants. If you are interested in any plants, wheat, bananas, coffee or radishes you will find facts about their history, cultivation and uses. The book can be secured direct from the publishers at $3.00.

Concerning the Black Locust

By C. W. Wood,
Michigan.

For a moderately long-time investment for the beekeeper with untillable land (and in many cases where the land is tillable), the black locust tree **(Robinia pseudo-acacia)** deserves consideration. This is said in the face of criticisms of the tree from some quarters. Let us first consider the criticisms.

Some persons object to the tree because it is short lived naturally and due to its susceptibility to the attacks of a wood borer. That the tree is naturally short lived is true; yet it grows so rapidly in its youth that long-lasting fence posts result in just a few years. Trees fifty feet high with trunk diameters of two feet are not unusual sights in old plantations. The borer problem is not easily solved, though an abundance of insectivorous birds which may be induced to stay on the premises by providing nesting boxes and feeding stations go far toward control, and borers are not always present in highly destructive numbers. The other objection sometimes advanced against black locust—suckering from the root — applies more to its use as a lawn specimen or as a tree for street planting.

The objections voiced in the foregoing paragraphs have reference to the plant as a tree crop rather than a crop for the beekeeper; yet, as to the latter, it is sometimes maintained that its heavy flow of nectar induces swarming in bees. This, it seems to me, is a good argument for the plant as a honey crop. In any event, a good beekeeper could pretty well control the tendency to swarm, and a plant that is capable of producing enough nectar to bring about such a condition is worth some trouble. The blossoming period of the black locust extends over almost a month during the latter part of May and early June. The tree is hardy to the Canadian line, at least in the East, and possibly farther north. Propagation is easy. In the spring, seeds are planted which germinate readily, and the seedlings grow rapidly.

Granulated Honey for Exhibition

In the Postscript I note a man wishes suggestions for getting honey granulated in the proper form for exhibition at next year's fairs. If he will store the quantity he wishes to exhibit in the basement or in a similar place of low temperature I think he will find it will remain in the granulated state desired. We have never had any difficulty in maintaining a state of granulation in honey thus handled. Benj. Nielsen,
Nebraska.

Petition for Suspension Of New Tariffs

A petition for suspension of new tariffs on shipments of honey, scheduled to become effective on the Union Pacific April 1, has been filed with the Interstate Commerce Commission by the Utah Citizens Rate Association, the Utah Beekeepers' Association, and the Superior Honey Company of Ogden. The tariff, if permitted, would in some cases double the present rate.

Now extracted honey may be shipped in mixed carloads, with the general description of canned goods, at rates and minimum weights applicable to canned goods with no limit as to the proportion of honey included, provided it remains a mixed carload. Under the proposed new tariff mixed carload rates would not be allowed on cars with more than one third of the net weight in honey.

Honey shippers in Utah and Idaho are taking advantage of the present rate to ship all their products to the territory involved. Idaho Utilities Commission has filed a similar petition of suspension. Glen Perrins,
Utah.

Famous Sayings --"Eat Thou Honey Because It Is Good"-- Proverbs 24:13

This oft quoted saying attributed to King Solomon is one of many references to honey in the Bible. Proverbs mentions honey no less than six times, while at least sixty-three such passages occur throughout the book.

The full quotation, "My son, eat thou honey, because it is good; and the honeycomb, which is sweet to thy taste" shows that run honey in those days was differentiated from comb honey. More evidence of this can be found in Psalm LXL, 10; Canticles V. 1; and 1st Kings XLV, 3.

Continuing the quotation, "So shall the knowledge of wisdom be unto thy soul" brings the realization that honey is chosen not alone for its goodness but also because it illustrates the worth of wisdom to the mind.

Here we show a picture of Codex Sinaiticus brought to the British Museum, from Russia, in which occurs such phrases for those who can read ancient text. The writing is wonderfully clear and it is a marvelous preservation.

Just think, that holy script was written almost sixteen hundred years ago! Think, too, that one hundred twenty-nine of these precious leaves were found in a waste-paper basket awaiting destruction! Now the price asked is a hundred thousand pounds sterling (well over half a million dollars).

The picture gives some idea of the text but, of course, is so reduced that corrections are not visible. The style and beauty of the original engender some small conception of the love and devotion whereby this great book was laboured. A. L. Gregg,
England.

Bees Will Return Your Loans With Interest

By Clarence J. Tontz,
Oklahoma.

TOO much cannot be said about the importance of aiding the bees when they are just beginning to build up their population, when they are weak from lack of stores or when they are queenless. Foundation is most important when a colony of bees is beginning anew, for from it they build a home for the hundreds of thousands of baby bees they are going to raise.

The success of a colony of young bees depends largely upon how much and what kind of foundation is given to them. It is rather hard to believe that many beekeepers start a new colony of bees with frames fitted with only a strip of medium brood foundation one or two inches wide. Even some large commercial apiarists use only a small strip of foundation to each frame and sometimes thin surplus foundation at that. These beekeepers argue that the less foundation they use, the less expense. Naturally, it would be less expensive at the time being, but I wonder what they think when one of their foundation-skimped colonies shows very little surplus in the fall, to say nothing of the irregular, sagging combs that so surely accompany narrow strips of starter foundation.

Several years ago I ordered a couple of packages of bees from the South and started them off on narrow strips of foundation. At first they seemed to do pretty well. They had built about four combs halfway down and filled them with honey and brood. The season wasn't any too good, but even at that the other colonies filled up their brood chambers, and some colonies stored a little surplus. Upon examining my two new colonies in the middle of the summer, I was shocked to find that they had not built any more comb nor stored any more honey than they had ten days after they had been established in their new home in the spring. They were merely living from day to day and not storing anything for winter.

To say I was puzzled would be putting it mildly. Hadn't I paid about eight dollars for these two packages, and hadn't the company's advertisement stated that these bees would soon increase their number to the boiling point—boiling over the hive, I mean—and weren't they supposed to store gobs of honey? What was my trouble? I have learned since by experience what it was. Those two colonies, having only thin, narrow strips of foundation to work on, had to employ the aid of a large percentage of their workers to secrete wax with which to build their comb. The bees, in turn, were forced to consume about eleven pounds of honey to secrete one pound of wax, thus using almost all of the honey that the field bees could store.

The colonies were trying diligently, but not very successfully to build comb, raise brood, store honey all at the same time with only a minimum of workers for each task. Consequently, the hives were not boiling over with bees, nor did they store gobs of honey. Instead they had to be doubled up and fed sugar syrup. However, I do not think the company that sold me the bees exaggerated, nor is a two or a three-pound package too small. To the contrary, I have learned by experience that package bees or a newly emerged swarm has more zest and energy than a wintered over colony and will gather a greater amount of honey in a shorter period of time, if it is given the right care.

Two years ago I had an experience quite in contrast. One of my colonies issued a good sized swarm which I placed on full sheets of foundation. I hived this swarm around the first of July, and when I examined it two weeks later I was amazed to see that it had drawn out ten full combs and had them filled with brood and honey. It even had full combs built from the top of the frame to the lid of the hive. I gave it a super partly filled with empty combs and the rest with full sheets of thin super foundation, followed in a few days by another super. The bees filled these two in record time, and had not the honeyflow ceased because of dryness, this colony undoubtedly would have filled several more supers before fall. At that, this particular colony stored as much honey as any other in the apiary. I am convinced that a colony of bees does not necessarily need much time to gather a great amount of honey; but conditions must be right and the bees must be started off on the right track. The least any beekeeper can do for his own good and for his bees' sake is to make possible (as far as human power goes) the conditions that will enable his bees to produce fair crops of honey.

Although there are many beekeepers who persist in skimping their bees in the way of equipment, I believe there are more beekeepers each year changing to the "economical in the long run" method of using full sheets of foundation both in the brood chamber and in the super. They learn by experiences of their own and of their fellow beekeepers that such a practice pays larger dividends.

For the benefit of beekeepers interested in getting nearly perfect brood combs I describe a method not originated by me but which I have practiced and found to be successful. Place frames of full sheets of foundation in full depth supers during a honeyflow. This must be done then; otherwise the bees, when idle, will gnaw holes in it. Also one should provide a place for drone combs in order to prevent the bees building drone cells on the worker comb. To get drone comb, insert a starter in the brood nest of an old queen.

Some beekeepers provide a special nucleus to build perfect worker combs. They give the nucleus a frame of brood placed against the wall of the hive, then several frames with full sheets of comb foundation next to the brood. Above they place a super of honey, so that the bees may be able to continue their work in bad weather. After the bees have drawn out the empty frame and the eggs have been deposited, the frame is removed and placed in the brood chamber of another hive chosen for it, while other frames are inserted in their places in the nucleus. In this manner frame after frame of perfect comb is drawn out.

Bees Prefer to Build Drone Comb

The amount of drone comb in the colony depends somewhat on the queen. A prolific queen laying rapidly solicits worker cells which are supplied by the comb builders. When she is satisfied, then, if free to build as they choose, the bees will turn to building drone comb because that is the easiest to build, takes the least wax and does well for storage.

In the old days when the use of foundation was not as universal as it now is, bees were often furnished with a number of combs, possibly two or three sheets of foundation and the remaining frames containing comb guides only. It was then that we learned by constant experience that when bees have accommodated their queen in the matter of worker cells, they finish their building with drone comb. There is scarcely any exception.

Nowadays, however, with the universal use of full sheets of comb foundation in the frames, this habit is prevented expression to a large extent. It is now easy to get worker combs because the bees have little choice but to follow the pattern given to them.

C. P. Dadant.

Shall We Remove A.F.B. Colonies From the Apiary Before Treating?

This is taken from the Indiana State Association News Letter of January prepared by James E. Starkey, Secretary of the Indiana Association and Inspector of Apiaries:

Everyone should know there is less danger from drifting bees when colonies affected with American foulbrood are entirely removed from the apiary before treatment. However, if such colonies are only moved a few feet or a few rods, the drifting is likely to be increased. No one in his right mind should attempt to shake a diseased colony in the midst of a large apiary or in a row where the hives are close because of the danger of spreading the disease by robbing and by drifting.

I have always advocated isolating diseased colonies before attempting the "brush out" plan of treatment either by removing healthy colonies or by transporting the infected colonies, properly screened, to a new location not less than a mile and a half away where there are no other bees about.

We must never forget there are precautions to be taken; and in view of a few disastrous experiences, I have reason to wonder whether it ever pays to take the risks. However, I have always said that removal for treatment is the safest plan outside of destruction on the spot.

No matter how efficient the beekeeper may be in honey producing, some little accident or dumb act may cause much trouble. If any of the bees can get out full of honey and go back, they are bound to get into some of the hives left in the apiary.

A large, successful producer once found disease in a strong two-story colony that sat farthest from the gate of the apiary and at the extreme end of a long row of hives all painted alike. Recognizing the danger of treating in the apiary, but wishing to save the bees, he determined to move them several miles to a hospital yard.

So one cool evening in May when the bees were all in the hive, the entrance was screened, the parts stapled together and the hive loaded on the back end of his truck. He drove the full length of the apiary slowly and without mishap. Wishing to reach the outyard before night he forgot about the chuck holes near the gate and began to step on the gas. Just as he was about to leave, his troubles began. The hive began to bounce and before he could check his speed it toppled right out on the ground, loosening the staples and bursting it wide open, releasing the bees. The combs were crushed and the honey was smeared over the ground while the bees took to the air.

All he could do was to pile on dry straw and gasoline and burn the whole mess. But not the bees that escaped into the air! The greater number reached and entered the nearest hive, a few less the next hive and so on down the line until only a sprinkle seemed to reach the last hive next to where the diseased colony had originally been.

He knew that would happen, so he was not disappointed when he found all of the colonies in this row showing varying degrees of infection before the end of the summer. What a loss from one little mistake.

When moving bees then, I am almost tempted to say, "Don't do it—burn." If you do move, don't forget the others who have bees near where you expect to be and if you move, be careful not to let such a thing happen as I have just described.

Since it is so hazardous to move and still more hazardous to treat in the apiary, why not kill the diseased bees, burn the combs, sterilize the hive parts and later fill the equipment with artificial increase, swarms or with package bees?

Sumac for Honey

In the eastern states there are many types of **Rhus glabra,** the sumac, which yield honey (page 448-1933). Like wild chokecherries and apples this shrub varies greatly. In some pastures it will seldom run over two feet high, while in rich ground it will grow to twelve feet.

It varies in character of bloom. Some blooms are small and compact, others large and loose. It varies in time of blooming, some blossoms opening in early July, others beginning to open two weeks later after the first ones have gone by. This is of great importance because it lengthens the blooming period. All these different variations, however, are of the same plant, **Rhus glabra.**

Allen Latham,
Connecticut.

To Distinguish Caucasians From Common Black

The question of how to distinguish a Caucasian from a common black queen is often asked.

It is difficult to do so when the queens are aged since the hair of the Caucasian and of the black bee has been worn from the body and both appear to be shiny black creatures with little to distinguish them. Often the Caucasian will have a little more yellow on the under side of the abdomen than the black.

The young queens of the Caucasian race may be easily told from the black in that they are quiet on the combs, have a decided gray cast due to the thick covering of hair and, as has just been said, the yellow color on the abdomen varying with different queens is a frequent distinguishing difference.

The common black bees are excitable and nervous. They run badly on the combs and frequently drop in clusters to the ground. They do not behave at all like the quieter Caucasians. Also Caucasians are usually much gentler.

The Garden Guide

The Garden Guide is the name of a newly revised and fully rewritten garden book published by the A. T. DeLaMare Co., of New York. It is a very comprehensive volume covering all garden subjects in one book. Twenty-eight different authors contributed to its pages, each one recognized as an authority in his particular field.

The books contains 576 pages and 300 illustrations and the price is very moderate considering the extent of the book, $2.65 postpaid. The book tells you how to raise flowers, fruits and vegetables, how to prepare a lawn, how to prune your trees, how to propagate your plants and a hundred other things having to do with the garden.

Diseases, weeds, insect pests, fertilizers, varieties—all these are discussed. Directions are included for making hotbeds and cold frames, greenhouses and garden furniture. Nearly a hundred thousand copies of previous editions of the book have been sold which indicates the extent to which it meets the gardeners'needs. It may be had from this office or direct from the publishers.

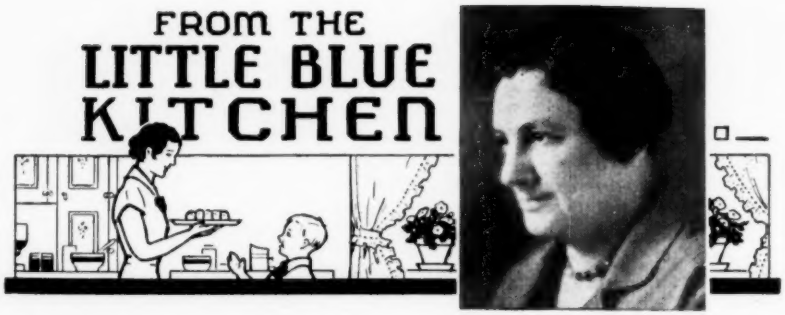
Requeening Laying Worker Colonies

I have no trouble requeening laying worker colonies when I use a queen not less than a year old and of the same stock as the bees of the colony to be requeened. I use the smoke method of introduction.

In several weeks you will find supersedure cells to get a queen. Cut one of these cells out and replace with a cell from the strain of bees you want. Make sure the cell is farther advanced than the other cells of the hive. In ten days you will find a new queen laying nicely. Use her. I have no success running in recently mated queens or queens that have been checked in laying.

K. E. Joseph,
Ohio.

FROM THE LITTLE BLUE KITCHEN



MOTHER'S FLOWER GARDEN

There is a dear place where the sweet roses blow—
All golden and crimson and white as the snow—
Where day lilies turn satin cheeks to the sun,
And asters bloom bravely when summer is done.

All flowers that ever a garden has known
Are here in their season most lovingly grown
By one whose dear image I'm keeping today
As fresh in my heart as the garlands of May.

She's dear at all seasons and fair at all hours
But I love her the best when she's out with her flowers—
This silver-haired gardener whose life ever grows
More fragrant, more lovely and more like a rose!

Ah yes, you have guessed it; I meant that you should—
The name of this princess of pure womanhood—
'Tis Mother, my mother, whom fond Memory
Shows the loveliest flower in life's garden for me.

Oh Mother, dear Mother, I see you tonight
As you stand 'mid your roses, all crimson and white,
And Oh as I see you, my darling so true,
My arms are outstretched to that garden and you!

—Lida Keck-Wiggins.

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THIS little poem is being used to head the Blue Kitchen Department today because in this lovely month of May comes Mothers' Day, a day set apart to honor that dearest friend of us all. The verses were written several years ago for a man cousin of the writer. He wished to give it to his mother on her birthday. When he received the verses he wrote the author: "While I recognize my mother in this poem, I know that every other chap will think you mean his mother too." So, as there is a bit of a universal appeal about "Mother's Flower Garden," and because the mother addressed did have just such a garden and is just such a wonderful personality, we wish our Blue Kitchen readers to get acquainted with her and with her garden, and perhaps the picture will bring nearer to each reader his or her dear mother. Wear a white flower for her if she is now walking among the lilies of the garden of God; a bright flower if she is still blessing by her presence the gardens of the earth.

Honey Lady frequently has interesting callers, and not so long ago a lady came to see her and to spend the evening. During her stay she told the following story which surely should give Blue Kitchen readers an idea or two. Honey Lady's friend said that in her old home town in Pennsylvania there was a little church with a high, open belfry. Into this likely place a swarm of bees, or rather a succession of swarms, came from season to season and brought nectar from the flowers in the surrounding fields. There would not have been any particular objection to this on the part of the church members had the bees stuck to their lasts, or their honey, if you will be literal. As a matter of fact many of the busy little buzzers decided to attend church. So they made it rather uncomfortable for many of the "sisters," who couldn't concentrate on the sermon with bees "on" their bonnets, if not "in" them. So the brethren got ladders and in due time routed the unsuspecting bees from their high tower.

Behind them, however, they left many pounds of really very fine honey. This honey was turned over to the women who had caused the deposing of the bees, and they in turn, extracted it from its natural comb, bottled it attractively in such containers as their shelves afforded, and sold it for the benefit of the church! Now while this is just exactly what any crowd of Pennsylvania Dutch would have done in the circumstances (Honey Lady knows, as she boasts some of that thrifty blood herself) isn't there a little helpful hint in the story for all beekeepers' wives and daughters?

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Here is a paragraph from a New York newspaper that Honey Lady found recently and passes along, because this is indeed something strange, if not new, in honey products. The Honey Loaf mentioned being a commercial product, this department has not as yet learned the secret of how the loaf is made but perhaps some of the Blue Kitchen readers may know, and if so, Honey Lady would be delighted to receive the recipe and to pass it along in a future issue of the American Bee Journal. Meantime here is what the New York newspaper said:

"Pure honey in loaf form variously flavored with Canton ginger, garden mint, and other flavorings introduces the latest innovation in the highly esteemed table delicacy—honey. Doing away with the stickiness of liquid honeys, loaf honey can be sliced, cubed or cut in fancy shapes for sandwiches, fruit salads, appetizers, sundae topping, cake decorations and a multitude of other uses never before possible with honey. The new product is made from a blend of selected raw honeys and molded to a tender consistency with the addition of fresh fruit pectin. Certain flavors of loaf honey go nicely with toasted English muffins for breakfast. For tea it may be used with crackers and cheese, and as an epicurean treat for cold meat, fowl or game accompaniment. One half pound loaves sell for forty-five to fifty cents in a number of retail stores."

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Grape fruit is so reasonable now that it would pay anybody to have it on the table quite frequently these days. Grape fruit halved and prepared for the table at night, and then literally soaked in extracted honey and allowed to chill till morning, makes one of the most delicious health foods in the world.

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Cherries are ripe, or they will be, very likely, before the June issue of American Bee Journal goes to press, so here is a little suggestion for something to make from cherries that will prove a delightful change by way of fruit desserts.

Cherry Pudding.

1½ cups flour
2 teaspoonfuls baking powder
4 tablespoonfuls fat
½ cup milk
⅛ teaspoonful salt
2 cups seeded cherries
1 teaspoonful cinnamon
¼ teaspoonful cloves
2 tablespoonfuls water
1 cup honey
2 tablespoonfuls butter

Directions: Mix flour, baking powder, and salt. Cut in fat with knife. Mixing with knife, add milk. When soft dough forms, pat out and fit over rest of ingredients, which have been blended and poured into shallow pan. Make three holes on top; bake twenty-five minutes in moderate oven or until top is a delicate brown.

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And here's something else that will make your mouth water! It's really and truly one of the most delicious ways to use honey. You will need to have some sponge cake or some lady

The honey used in the Blue Kitchen is furnished for the good of the cause, by the New York State Federation of Beekeepers' Societies.

fingers and paper charlotte cases on hand when you make this "Honey Charlotte." Otherwise, you are likely to have all the "makings" in your general pantry stock.

Honey Charlotte.

Whip one cup of thick cream with one teaspoonful of powdered cinnamon, and gradually whip into this one half cup of honey, previously chilled in the refrigerator. Use this mixture to pile into paper charlotte cases, lined with sponge cake, or split lady fingers, and garnish each with a fresh strawberry or a cherry, candied or fresh, or even a blackberry if they are in season when you make the charlotte.

That's all, and Honey Lady hopes you'll like it.

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The flavor of honey depends on the kind of nectar brought in by the bees; the flavor of a man's personality depends upon the kind of thoughts he stores up in his soul. Why not let only the sweet ones in?

Home Economics Leaders Reach Large Field

A survey of the Home Economics field is given by Practical Home Economics published in New York City. More than two million young women of high school age are studying home economics in public schools under the direction of those within the subscription list of that publication.

In cooking classes alone, there are purchased for these demonstrations and classes, $15,600,000 worth of raw food products—plus the equipment needed for its preparation.

The school cafeterias of the country, mainly operated by home economics teachers, are another large consuming group. They serve 8,000,000 meals a day, some 60,000 school cafeterias, with an annual expenditure for food of about $279,000.000. The amount spent for new equipment and replacements is proportionately large.

This item is sent in by Mrs. Jensen of American Honey Institute to show the tremendous reach of home economics workers and its importance to beekeepers.

Uvalde Honey Crop Reduced By Freeze

John Hancock of Dallas, Texas, sends a clipping from the Dallas News reporting an expected drastic reduction in the honey crop in Uvalde County, one of the largest honey producing sections of Texas as a result of the loss of guajilla blooms during a recent freeze. The guajilla brush, which provides most of the flowers, was just starting to bud and was badly damaged by one of the latest frosts ever recorded from Uvalde.

THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

HONEY—QUALITY AND PRODUCTION

Is it true that water white sage honey is the mildest of all honeys and that it never granulates? Which variety of sage produces the water white honey? Is sage honey as light as clover honey?

Is there any difference in the color and flavor of sweet clover and white clover honey?

Does honey from a high altitude have a heavier body and a more intense flavor than honey produced in low altitudes?

Which state leads in honey production, and which is second? Is there a bee magazine published in California? TEXAS.

Answer.—Sage honey is very mild in flavor and does not granulate readily if at all. The black sage of California is the one which yields the most honey. The honey is called water white and is lighter in color than the common white clover of the middle western states. Some sweet clover honey is as light in color.

Honey from white clover is light amber in color, while that from sweet clover is much lighter, being water white in some localities.

Alfalfa honey from high altitudes is very light in color and mild in flavor, while that from low altitudes like southern Arizona or southern California is dark in color and strong in flavor. It is probable that honey from other sources is affected in similar manner.

Honey in dry regions is inclined to be heavier in body than that from humid sections since the bees are able to evaporate a larger percentage of the moisture.

California is usually credited with the largest production of honey, which is to be expected because of its immense area. For the same reason Texas is usually given second place.

"Bees and Honey" is published by George W. York at Alhambra, California.

QUEENLESSNESS — REQUEENING AND MARKING

1. What is the best way to tell queenless colonies?
2. What is the best time to change queens and how can one tell when it is necessary to change?
3. What is the most necessary time to put on queen excluders?
4. Where can one buy queen marking paint and what kind of paint is it?

MONTANA.

Answer.—1. You can easily recognize queenless colonies when you examine them in the spring. The colonies with queens have brood; those colonies without queens have no brood or else only drone brood laid by workers.

2. Queens need to be changed only when they are old or worthless. Unless they are short of food, you can recognize their lack of value by the small amount of brood they have.

3. Queen excluders need not be used until the season is getting advanced and there is danger of the queen laying eggs in the honey supers.

4. Paint for marking queens is easily made with a few drops of oil and a little color to which you add some turpentine so that it will dry quickly. A mere touch of the paint on the back of the queen is all that is needed.

USING FRAMES OVER

We have been troubled by foulbrood for the last two years. All of the equipment has been thoroughly cleaned with a blow torch and some of the frames have been boiled. Can the frames be safely used after such a treatment? GEORGIA.

Answer.—If you use the torch thoroughly on this equipment, it is probable that it may be used again. We never use the frames again but burn them as their numerous corners make them much more difficult to clean. However, if they are carefully cleansed, it is probable that they will be safe.

STORAGE OF HONEY IN IRON

1. I should be glad to know if I could keep and store honey in an iron tank. Will this discolor the honey?
2. What can I do to keep the honey from turning to sugar? How can I tell what temperature to heat the honey?

ILLINOIS.

Answer.—1. You cannot keep honey safely in an iron vessel. Use sixty pound cans if you do not have a tin tank. There is nothing better than sixty pound cans.

2. It is difficult to keep some grades of honey from granulating or turning to sugar as you call it. We generally keep our honey without heating it until it granulates. Then, if the customer does not like it granulated, we melt it for him. It is very foolish for people to imagine that honey is spoiled when it granulates. You can keep most honey liquid by heating it to about 140 degrees, but it is difficult to get it at that temperature without a part of it becoming too warm.

PACKAGES IN LARGE HIVES

1. I have two Modified Dadant hives and will get two packages of bees in the spring. I will have foundation in the hives but no combs or honey. Will I have to feed them as soon as they arrive and what?
2. Will the bees make any surplus honey the first year or will I have to give them all the honey they make for winter stores?
3. Under those conditions, when would you advise having the bees shipped?
4. Will I have to keep the queen confined at first or should I release her in the hive when the bees arrive? IOWA.

Answer.—1. If your packages arrive at the beginning of fruit bloom, they may need feeding. If there is any rain, they will probably have to be fed. Use sugar syrup—about ten pounds of sugar to each gallon of water.

2. Whether they make any surplus honey the first year or even enough to live through the winter will depend upon how strong they are and how much of a crop of honey there is during the year. It is impossible to say.

3. Have them shipped as near the blooming of fruit trees as possible. Give them full sheets of foundation close together and let them make a good cluster to keep warm.

4. I certainly would not confine the queen at any time.

THE WAX MOTH

How can one prevent the occurrence of the codling moth in beehives—the one that builds a small cocoon on the frames. Is such a pest caused by dampness or by the hive being too low on the ground? What are your suggestions for treatment of such hives?

NORTH CAROLINA.

Answer.—It is not the codling moth that you have to fight in the hives of bees but

the wax moth (**Galleria mellonella**). There is nothing to fear from this moth if you keep your colonies strong. When a hive of bees becomes queenless, the number of workers decrcases constantly until there are not enough of them left to protect the combs. Then the wax moth invades the hive and lays eggs. To prevent this you must keep your colonies with queens and strong enough to cover their combs. If you have colonies that become so weak that they cannot cover their combs, you should reduce the number of combs to the amount the bees can defend. Keep your honey room closed against the wax moth.

EFFECT OF CAGING THE QUEEN

There has been some discussion as to whether a queen would suffer any ill effects if caged among her own bees for eleven days during the swarming season. What is your opinion? MINNESOTA.

Answer.—I have never tried caging a queen to keep her from swarming. I believe that it will injure her more or less to be unable to lay at her most prolific time. It might be that the bees would become indisposed toward her. It much depends upon the circumstances and the results would naturally differ. I am sorry I cannot give you a more positive reply.

BEES IN A POOR LOCATION

I am located in a country district where there is very little fertile land, within five miles of the Atlantic Ocean, with nothing but pine forests all around. There doesn't seem to be any clover or alfalfa raised and very little fruit of any kind. Flowers are the only things raised in this locality that bees might live on. Do you think it would be possible for me to raise bees successfully here? NEW JERSEY.

Answer.—The description you give in your letter of the conditions in your locality is not very encouraging. I believe that if I were to try to raise bees in that locality, I would place the apiary in some spot four to ten miles away at the home of some farmer who would have a better flower producing location. It is not difficult to find people who are willing to have bees located on their farms provided they are not compelled to work with the apiary. We have several apiaries situated in suitable places, and a fifth of the surplus honey is the rental we give.

SIX COLONIES OUT OF FOUR

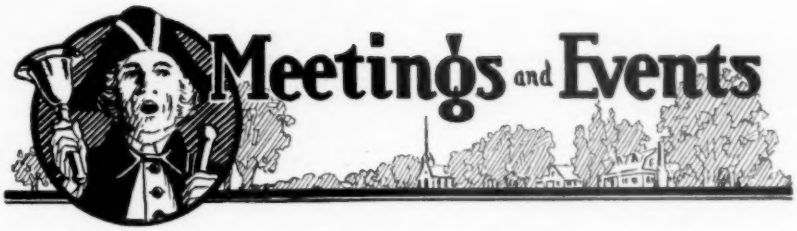
I have four hives of bees and want to make six hives. Can I take two frames of brood and put them in the new hive with a new queen? MISSOURI.

Answer.—You can make divisions by putting two frames of brood and bees into a new hive, but unless you give more bees your swarm will be too weak. We usually make a division by taking two frames of brood, as you propose to do, and putting the hive containing them on the stand of another colony which we put in a new spot. This is making one increase out of two colonies and in that way the swarm is strong enough.

HIVES PER ACRE

How many acres of sweet clover should be within a mile and a half of fifty colonies of bees? NEBRASKA.

Answer.—You are safe to count on a crop of honey in the average year if there is an acre of sweet clover within reach of every two hives of bees. Some seasons that acreage will carry even more bees. From what I know of the country around Lincoln, I should expect that there would be sweet clover enough for fifty colonies almost anywhere. Of course, the more clover the better.



Cook-DuPage (Illinois) Meeting

The fourteenth annual meeting of the Cook-DuPage Beekeepers' Association was held Saturday, February 24 at the Bismark Hotel in Chicago. There was a banquet at 6 P. M. The following officers were elected for the year: E. J. McCormick of Chicago, President; Leroy Stockdale of Palos Park, Secretary and Treasurer; W. C. Young of Chicago, first Vice President; Mrs. Hoffman of Riverside, second Vice President; Adam Bodenschatz of Lemont, third Vice President; Dr. W. C. Ladwig of Elmhurst, fourth Vice President; Edward N. Norwalk of Downers Grove, fifth Vice President; Mrs. Adam Bodenschatz of Lemont, hostess of the honey table; Mrs. C. L. Duax of Chicago and Mrs. A. G. Gill of Evanston, on the refreshment committee.

The attendance at the meeting was very encouraging, 44 at the banquet. Dues were fixed at $1.50. It was also voted that the Secretary receive a salary of 25 cents per member per year. On motion from Mrs. Duax, the office hostess was declared to be an elected office.

There were a number of splendid speakers. Leroy Stockdale,
Secretary and Treasurer.

Bees to Visit the 1934 Century of Progress

If, at the World's Fair this year, you hear the familiar buzz of the honeybee, you will know we are just curious visitors like yourselves, flying around, taking in the sights.

I and my fellow companions will be on the grounds every day of the Fair with headquarters at the Entomology Display in the Hall of Science. Our home will be the only mechanical revolving glass walled hive in existence and every bee will have a chance to see the different types of curious people looking for what they can find out about our Royal Mother, the Queen, and how she makes us take care of the housework.

When wishing to leave the hive, we have a special avenue with a glass roof, leading to an opening in the wall to the outside; another exclusive feature and we will not be bothered by human beings on our way out.

Last year, to show folks how our queen is brought into the world, we built queen cells in combs which were next to the glass wall and reared a queen. Perhaps we will accommodate the visitors the same way this year.

There may be other exhibition hives on display but we fellows are the only ones who can really call ourselves "Fair Visitors" as the other bees will be confined in observation hives. So if you wish to be given the once over, look us up in the Hall of Science and under the hive you will find a card stating that our comforts are being provided for by E. J. McCormick, President Cook DuPage Beekeepers' Association and A. G. Gill, Vice President Illinois State Beekeepers' Association.

Here's hoping to see you at the Century of Progress Exposition in 1934. Mr. Drone Bee,
Mrs. Queen Bee and
Her Maids in Attendance.

Cass County Association (Michigan)

The Cass County Beekeepers' Association met at Cassopolis, March 16, to discuss the proposed honey code. The majority of the beekeepers present were unfavorable.

The association expressed its appreciation of the services of American Honey Institute and donated money for its use. Our association favors the increased support of the Institute which has increased honey consumption rather than adherence to a price fixing code which would not increase consumption, but might lessen it.

Our association has persuaded the County Board of Supervisors again to appropriate money for inspection in the county.

Membership dues were raised. Members pay a minimum of 25 cents. Those with more than five colonies pay one cent per colony plus the minimum. Some of the members' dues amounted to two dollars or more. (This was a good idea to me.)

Officers for 1934 are as follows: President, Arthur Dodd, Niles; Vice President, Mark Le Munyon, Cassopolis; Leon C. Nieb, Secretary-Treasurer. Leon C. Nieb,
Michigan.

Yakima County Officers

Officers for the year for the Yakima County, Washington, Beekeepers' Association are: President, C. W. Higgins of Wapato; Vice President, J. B. Espey of White Swan; Secretary-Treasurer, R. C. Immels of Toppenish, and Trustee, I. L. Swain of Prosser.

The inspection of bees has been shifted from the agricultural to the food division and according to present plans, there will be four state inspectors, two in the eastern side, two in the west and one will be stationed in the Yakima Valley.

The meeting will be held in Wapato in May. I. L. Neill,
Washington.

Michigan Memorial to Demuth

The big summer meeting planned in Michigan August 1, 2 and 3, and announced last month in Meetings and Events is to be a memorial meeting to Geo. Demuth, editor of Gleanings, who died on March 2 of this year. All beekeepers who can possibly do so, should attend this meeting.

Traverse City Meeting May 22

A meeting of fruit growers and beekeepers will be held in Traverse City, Michigan, May 22. The speakers will include Don Hootman, Horticultural Specialist, of the state college and R. H. Kelty. James Hilbert of Traverse City is in charge of the program. R. H. Kelty.

Southeastern Michigan Beekeepers' Meeting May 11

The Southeastern Michigan Beekeepers' Association will hold its spring meeting at the Court House in Adrian on the afternoon of May 11. Professor Kelty of the Michigan State College, newly elected president of the American Honey Institute, will be among the principal speakers.

Much of vital interest will be discussed. Our Association is the largest and liveliest in Michigan. We extend a invitation to out of state beekeepers in Ohio and Indiana and Illinois to attend. They will find it interesting and worth while.

John D. McColl,
Secretary.

Budge and Farnsworth Recommended Inspectors for Cassia and Minidoka Counties (Idaho)

The Mini-Cassia Beekeepers' Association at a recent meeting moved to appoint one inspector for each county in place of H. H. Keck who has been serving as inspector for both counties. E. R. Budge of Cassia County and E. J. Farnsworth of Minidoka were recommended.

The outlook for the 1934 honey is favorable according to Mr. Budge.

Glen Perrins,
Utah.

Death of Gerald Redfield

Gerald Redfield, 27, of the Superior Honey Company, Los Angeles, died here unexpectedly in March. He was born in Ogden and reared in honey surroundings. He was widely known by apiarists and honey men of the West. Glen Perrins,
Utah.

Yakima Beekeepers Favor Code

Drafting a code for honey producers and dealers under the Washington State Agricultural Adjustment Act was favored by the Yakima County Beekeepers' Association at its February meeting. Fred Mandery, of Tenino, was authorized to act for the association in the event of the formation of a code.

The members also voted to ask J. W. Robinson, state director of agriculture, to meet with them for a conference on the poison spray situation. The arsenate of lead being used in potato fields is decimating the bee population of the valley, and the growers are planning to ask him to recommend Paris green as a substitute spray.

Beekeepers agreed to furnish only two-story hives of bees with four brood frames for pollination in the orchards, but no agreement as to price was reached. All growers favored an additional charge of fifty cents a hive where the orchardists insist on scattering colonies widely, or where fewer than ten hives are rented.

I. L. Neill,
Washington.

Plans for Huge Southern Meeting

J. G. Puett, Secretary of the Southern States Beekeeping Federation, writes of plans for the meeting of the Federation and the meetings of American Honey Institute and American Honey Producers' League at some time in the South this year. Further details will be announced later.

Annual Meeting Kentucky Beekeepers' Association.

The Kentucky Beekeepers' Association held its annual meeting at the University of Kentucky, Lexington, in conjunction with the Farm and Home Convention, during the week of January 23rd.

Mr. James I. Hambleton, senior apiculturist, U. S. D. A., assisted with the program. Other speakers included Lander Skinner, of Winchester, president; W. A. Price, and H. H. Jewett, of Lexington.

John S. Reese, of Winchester, who has just passed his 82nd birthday was present and took an active part in the discussions. Mr. Reese is one of Kentucky's large and well known beekeepers.

In the business session following the program L. E. Gooch, of Nicholasville, was elected president and W. A. Price, secretary-treasurer.

Bee School and Annual Meeting in Pierce County, Washington.

The 14th Annual Bee School, under the auspices of the Pierce County Agricultural Agent, was held in Puyallup, Washington, February 26th, in the Civic Auditorium. Swarm control, requeening, fruit and berry spraying and the inspection report comprised the program.

Fruit and berry spraying, discussed by Professor Hanson, of the Western Washington Experiment Station, was the center of interest. Poison spraying during fruit and berry bloom is taking the lives of thousands of bees at a time when beekeepers can least afford to lose them. The situation can be somewhat controlled where commercial fruit growing is important but the backyard orchard that is sprayed any time by anybody brings a problem that is beyond the control of the beekeeper.

At the close of the session, the Pierce County Honey Producers' Association held its annual meeting. E. B. Ellingson, President, of Parkland, stressed the desirability of having honey placed on the County Welfare grocery list. Most of these boards approached argue that honey is a luxury and that taxpayers can not furnish luxuries to the poor.

The Secretary of the Association was instructed to approach the board with facts about honey. This was done, by M. F. Mommsen, and now honey has been placed on the welfare list and the children of the poor may enjoy honey which is as essential to the health of the child as milk.

This shows that organization can accomplish what the individual cannot and it shows that a campaign of education is essential in the creation of a wider market for honey.

Officers of the Pierce County Association: E. A. Ternan, Ohop, President; Mrs. Arthur Green, Graham, Vice President; and M. F. Mommsen, Tacoma, Secretary-Treasurer.

M. F. Mommsen,
Secretary.

Idaho Assessors to Be Inspectors Also

W. H. Wicks, State Director of Plant Industry, has advised bee inspectors of Idaho that they are to be assessors for a period long enough to put beehives on the tax rolls. Under the Idaho law, beehives are to be assessed at about $1.50 each. The inspectors can locate more bees than anyone else and increase the collections of three cents a swarm which they are also required to make out as inspectors.

Each beekeeper is entitled to a license on payment of the three-cent fee. The tax is in addition.

Glen Perrins,
Utah.

By G. H. Cale

SO I have been missed the last two months! S. F. Haxton of Philadelphia accuses me of being out in the bee yards looking for the beehives. Well, so far, friend Haxton, all the hives are out there. There are only about six colonies dead in six hundred. It has been a very mild winter. In fact, winter did not come until spring and then, the first of March, we had real winter—snow and cold, but only for short periods.

We need water. How badly we need water! Some of the worst dust storms in years have swept down over the Dakotas, Minnesota, Iowa, Nebraska and Kansas.

— o —

It seems certain that white Dutch clover, the old time dependent, is not to favor us this year. Sweet clover is the main expectation—if the weather is right—if the plants prove to be abundant. So many "if's" in beekeeping. As George Demuth said, "Bees, plus honey plants, plus morale, plus weather equal a crop." And if you take out any factor it equals a failure. I often think beekeepers would all have been in California in the days of '49!

— o —

Charles Roy of Sparta, Wisconsin, is afraid we have discontinued "All Around the Bee Yard." Not so. The truth is, there was too much material for the last two numbers, so someone had to offer sacrifice and this department was the goat.

— o —

Howard M. David of Nevada state, asks about our mention in the August number of taking off honey with carbolic acid. "Do you use more than a 10 per cent solution? A wholesale chemist told me that chemically pure acid is in the crystal form and that the highest liquid form obtainable is 88 per cent. It is dangerous to handdle."

We have used both crystal and liquefied carbolic acid. It **is** dangerous to handle, because it burns and is poisonous internally. Wear goggles. **Be careful of your eyes.** Keep a bucket of cold water handy and if a drop gets on your flesh wash it off immediately.

Use it without any dilution. It takes about ten minutes for bees to leave deep supers and about half that time for shallow supers. It is also suitable for comb honey.

Up to January 15th, the Market News Service Honey Report of the Government gave an average wholesale price for white honey, delivered, of 5¾ cents and 5 cents for amber in carlots. This is some improvement over a year ago but not enough. Local sales have been a mite higher, but not much. There is more demand now for amber honey than for a number of years. Bakers are using it in large quantities, and as long as the price is not too high they will continue to do so. When the price of honey compares favorably with that of other invert sugars bakers prefer honey because of its natural qualities.

— o —

Ever notice how much more easily some honeys ferment than others? I wonder if there is a difference because of the situation of the nectar in the flower? It seems that honey from nectar gathered in open flowers is more easily fermented.

— o —

There is going to be much feeding this spring. Mild weather, frequent flights, early brooding, and so of course colonies will become quite short of stores. Even colonies that have fifty or more pounds may be short. Look out in May.

Considerable spring dwindling this year; some yards worse than others. Brood rearing had started before the cold weather of later winter, and so the bees were more worn out than usual. Some yards do not show it as much as others. On the whole, however, the bees are ahead of the season.

— o —

I am impressed this year more than ever with the **importance of queens.** One yard, in particular, divided into halves, with one half thoroughly requeened and the other half not, is appalling in the half with the old queens. This is often a neglected feature of honey production. Queens, as Doolittle said, are really **the soul of the colony.**

— o —

This year a chronological chart of last season's happenings has proved interesting. A running summary tells us that packages were put out April 17th to April 29th, and shows an average production of honey of 50 to 100 pounds per package. It does not tell, however, whether earlier packages were better.

Spring bloom is about normal, if anything a few days behind 1933. Last year, during the bloom of plum and redbud, we were able to make divisions and requeen. Some of the divides made a crop of honey. The requeening certainly paid.

— o —

We went into heavy feeding last year on the 10th of May. From the 6th to the 18th of May we had perpetual rain. Feeding continued until the first of June; then the flow started. This year will be the same or worse. I hope we have the rain soon.

— o —

Last year our spring flow from white Dutch clover started on the second day of June, to be followed by sweet clover ending July the tenth, about six weeks; then an interval from July the tenth to August fifthteenth, a little over a month, when the fall flow began from Spanish needle and heartsease and continued till the tenth of September, an unusually good season.

Time to Live

"Time to Live" is the suggestive title of a new book by Gove Hambidge, recently issued by McGraw Hill Book Co., of New York. Hambidge is fortunate in that he has been able to readjust his life to the five hour day and his book deals with the interesting things which can be done with the leisure time thus available.

Hambidge assumes that the current trend will provide more leisure to most people and sees the importance of proper use of this time. He says, "The future of civilization may well depend on how we use this new-found leisure. We can squander it merely for more standardized, predigested amusements. Or we can search deep and think long to discover what manner of life expresses the best each has within him."

It is a thought provoking little volume which will interest those who are concerned about the direction in which we are traveling. The price is only a dollar and a half and the book may be had direct from the publishers.

Iowa Homemakers' Program

Much interest was developed in the Homemakers' half hour given over the Iowa radio station, WOI at Ames. So many recipes were sent in by listening enthusiasts that Miss Nelson of the Home Economics Department of the College prepared a mimeographed copy of the best ones for distribution.

A small cash award was offered for the best recipes using honey. The first prize went to Mrs. Arthur Vaughn, Rolfe, Iowa, for honey cookies. The second prize was given to

Miss Dorothy Huelska, Gaylord, Minnesota, for pumpkin pie. Others receiving awards were Mrs. Ray E. Hansen, Titonka, Iowa; Mrs. E. S. MacManus, Waterloo, Iowa; Mrs. E. W. Ewell, Des Moines; Mrs. A. C. Borel, Dows, Iowa, and Mrs. Paul Kuehnast, Humbolt, Iowa.

Thirty recipes for honey cookies were received beside many for candy, cakes, puddings, gingerbreads, etc. Those interested in these recipes should write to Radio Station WOI, Ames, Iowa, and ask for the honey recipes.

Queen Reservoirs

George Polhemus, in writing about his successful package bees (page 106), in March, says "It seems advisable to recommend a larger queen reservoir than was used in this apiary during the past season." That idea of a queen reservoir or reserve is taking hold. That is good. It was first called to our attention in good working order at Newman Lyle's apiary, in Iowa. In every yard he has nuclei with reserve queens. These queens are purchased from breeders, introduced to nuclei where they may be at hand. Also, in effect, they should be tested queens when they are ready to use. New queens may be run into the reservoirs as fast as old ones are used. It is so arranged that the nuclei can be united at the end of the year to make colonies for winter.

This keeps up the vigor and high quality of queens and requeening becomes a never ending part of apiary practice. There is no particular season set aside or no particular year as is so often recommended. Queens are removed and replaced just as rapidly as they show signs of deterioration.

A Stick for the Queen-Cell

Not a bit of credit would I take from G. M. Doolittle; for he was a guiding light during my early years in beekeeping, and I read all his writing with much interest and profit. But when you say on page 48 that "no small amount of study and work was attached to finding the true dimensions (of the queen cell)" you surely give credit to Doolittle which his own words do not warrant.

When I made my first dipping sticks for cell cups I did what I should think anyone would do. I procured a matural cup from a colony of bees and shaped a piece of wood so that it just fitted into it. I thought Doolittle probably did the same thing and so I have just given a glance into his "Scientific Queen Rearing." On page 26 I find these words: "Therefore I made a stick so that it would just fit inside of a queen cell." Not much labor and study in that! Allen Latham,
Connecticut.

"Honey-Cream" in Demand

By V. G. Milum,
Illinois.

From the February issue of **The Milk Dealer,** we glean the following: "On one occasion, however, the announcement included description of a new Adohr product, 'Honey-cream'. The response next day was enormous. The switchboard at the main plant was busy from morning until night clearing calls of women who were placing orders and Adohr, before the day was out, could not supply the demand."

This statement appeared in an article entitled, "Grand Opera Brings Customers to Los Angeles Dairy," describing the method of one of the largest distributors of milk in the Los Angeles territory, the Adohr Milk Farm, of calling attention to their products by means of a grand opera radio program over three Los Angeles stations. According to the article, the commercial feature of the broadcast was confined to one announcement at each performance which was usually a statement regarding food values of milk, with incidental reference to Adohr.

But honey and honey-cream came in for its share of free publicity. Have you ever sampled honey-cream? It is delicious. What is it? Honey-cream is a mixture of high test cream (75% or more of butter fat test) and honey in the proportion of approximately 58% and 42% respectively of cream and honey.

"Honey-cream" can be used as a spread for biscuits and bread, as a filling for cakes, as a topping for salads. At ordinary temperatures it is of the consistency of butter—melted—it is delicious on pancakes. It has been recommended for "salt-free" diet patients because it is food with a flavor and without other objectionable features for certain types of patients. Honey-cream coated with chocolate makes a tasty and nutritious candy bar.

We believe that Honey-cream should be pushed in every community. City dairies have the equipment to handle this product. They have their channels of trade and delivery established. Enormous amounts of honey will be needed to supply the demand.

"Honey-cream" is the product announced by Professor P. H. Tracy, of the Dairy Manufacturing Department, of the University of Illinois, in 1932. Bulletin No. 387, "How to Make Honey-Cream" can be obtained by addressing requests to the Agricultural Experiment Station, Urbana, Illinois.

Honor Roll

List of American Honey Institute Subscribers from April 1, 1933 to March 31, 1934

Supporting Members

A. I. Root Company, Medina, Ohio	$500.00
Dadant & Sons, Hamilton, Illinois	300.00
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W. E. Harrell, Hayneville	1.00
W. A. Ruffin, Troy	1.00

Arizona

Glen F. Blair, Phoenix	$10.00
Arizona State Bee Ass'n., G. F. Blair, Sec., Route No. 6, Box 96, Phoenix	9.00
Leslie Wedgeworth, Oracle	5.00
W. J. V. Johnson, P O. Box 1377, Benson	5.00
J. F. Bigelow, Casa Grande	1.00

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H. R. Daman, Durham	4.54
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Wm. Segsworth, Route 2, Grass Valley	1.00
W. F. Schaefer, Rt. 1 Box 75, Anaheim	1.00
B. J. Collins, Garden Grove	1.00
Irving W. Ohmstede, 119 E. Colton, Redlands	1.00
Wm. L. Carruthers, 2124 Kelton, Los Angeles	1.00
T. H. Shepard, Calexico	1.00
Mr. Moffatt, 443 Hamilton St., El Centro	1.00
W. H. Goode, Calexico	1.00
Verne Austin, Brawley	1.00
O. P. Mandrapa, Calexico	1.00
H. Cross, El Centro	1.00
Paul E. Beatty, Anaheim	1.00
J. D. Huston, Fullerton	1.00
J. W. Stives, Fullerton	1.00
Wm. McPherson, Santa Ana	1.00
G. W. Edwards, Seeley	1.00
B. G. King, El Centro	1.00
G. Lohrli, 6607 Palm Ave., Riverside	1.00
Calif. Olive & Honey, 125 S. Spring, Los Angeles	1.00
Robert B. Kolsbun, Conoga Park	1.00
Claude R. Bardrick, Oceano	1.00
Walter Dempsey, Route No. 3, Watsonville	.50
Sidney A. Vanderpool, Route No. 3, Box 334, Watsonville	.50

Colorado

L. R. Rice, Greeley	$8.55
Chas. Adams & Son, Greeley	8.28
Otto Piper, Orchard	5.52
J. A. Green, Grand Junction	5.22
J. E. Waldeigh, Route No. 3, La Junta	5.00
J. W. Holzberlein, Jr., Grand Valley	5.00
Fred Schappi, Box 62, Nucla	3.00
Hans M. Mathison, Denver	2.76
John Olsborg, Platteville	2.76
J. S. Nease, Salida	1.00
Harry McCombs, Sterling	1.00
W. A. Cheek, Merino	1.00
E. F. Gordon, Boulder	.70

Connecticut

Connecticut State Bee Ass'n., Meriden	$25.00
Engelhardt & Miller Apiaries, Wallingford	5.00
Mrs. Roy Stadel, Southington	2.15
Carlton W. Groteau, Mt. Carmel	1.00
Edna E. Erickson, 100 Elm St., Danbury	1.00

Florida

Harry E. Williams, Citrus Center	$5.00
J. H. Booth, Box 204, Labelle	1.00
Thos. E. Cato, P. O. Box 94, Pierce	1.00
A. C. Lundin, Tampa	1.00
Wm. Hahman, Green Gables, Ormond Beach	1.00
Robert E. Foster, Gainesville	1.00
L. M. Lewis, Havana	1.00
Max C. Krueger, Eaton Park	1.00
John Womsley, Merretts	1.00
M. F. Darby, Zephyrhills	1.00

Georgia

T. E. Dennington, 433 S McDonough, Decatur	$3.37
Frank M. Baldwin, Presbyterian Church, Darren	2.00
C. E. Lovett, 1007 Standard Bldg., Atlanta	1.00
G. G. Puett, Hahira	1.00

Idaho

Robert E. Miller, 236 5th Ave. N., Twin Falls	$4.00
Wm. T. Gibson, Rexburg	2.50
O. S. Cox, Shelley	2.50
Wm. W. Mitchell, Shelley	2.50
Lee Browning, 264 N. 3d E., Rexburg	2.50
H. C. Fowler, 125 S. 2d E., Rexburg	2.50
W. E. Liebert, St. Anthony	2.50
Lee Hanson, Rigby	2.50
Arthur Shore, Blackfoot	2.50
J. H. Stoneman, Blackfoot	2.50
Earl J. Miller, Blackfoot	2.50
E. M. Nelson, Blackfoot	2.50
C. M. Hurst, Blackfoot	2.50
H. B. Weber, Blackfoot	2.50
L. F. Randall, I St., Idaho Falls	2.50
J. Epstein, G St., Idaho Falls	2.50
Sam P. Nealey, Sterling	2.50
Grover Mobley, Rigby	2.50
H. R. Bowen, Boberts	2.50
C. B. Roscoe, Roberts	2.50
C. E. Friedrich, Kuna	1.80
K. M. Hutteball, Boise	1.80
Phil Roney, New Plymouth	1.80
Atwater Honey Co, Meridian	1.80
Clyde Nesbitt, Meridian	1.80
W. P. Murphy, Boise	1.80
Roy Rabbitt, Caldwell	1.80
Frank Jolly, Meridian	1.80
Idaho Honey Co., J. M. Stark, Middleton	1.80
C. A. Williams, Meridian	1.80
Albert D. Wood, Boise	1.80
C. E. Sprague, Caldwell	1.80

Illinois

Anonymous, Belleville	$20.00
C. Holm, Genoa	14.00
L. L. Ness, Morris	11.00
G. H. Cale, Hamilton	10.00
C. J. Anderson, R.F.D. 2, Box 102, Morris	9.74
Morgan-Scott Co. Bee Ass'n. (L. W. Fisher, Secy.), Woodson	8.69
Wesley W. Osborn Hillsboro	7.00
Max Noack, 3911 Polk St., Chicago	6.00
C. G. Streider, Brimfield	6.00
A. A. Augenstein, R.F.D. 2, Dakota	5.20
Brother Frederick, Techny	5.00
Winnebago Co. Bee Ass'n. (B. E. Beach, Secy.), Rockford	5.00
Hancock Co. Bee Ass'n. (M. G. Dadant, Secy.), Hamilton	5.00
V. G. Milum, Champaign	5.00
St. Clair Bee Ass'n. (G. L. Hankammer, Secy.), 712 W. Monroe St., Belleville	5.00
Elva Kirlin, Warsaw	5.00
A. L. Holmes, Route No. 5, Jacksonville	3.35
W. G. Duckwall, Jacksonville	3.34
Tri Co. Bee Ass'n. (Elizabeth Ordnung, Secy.), Oregon	3.00
J. J. Vargo, Granite City	3.00
George Reints, Lindenwood	3.00
J. J. Hollowell, Farmer City	2.54
Lawrence W. Fisher, Woodson	2.49
Eli Elieff, R.F.D. 4, Galena	2.00
L. A. Dean, Big Rock	2.00
T. M. Cherry, 1223½ Broadway, Quincy	2.00
Lawrence Rocke, R.F.D. 1, Box 2, Roanoke	2.00
Raymond H. Rocke, Box 321, Morton	2.00
O. W. Kennett, Ohlman	2.00
Ivan Whiting, Roscoe	1.20
Harvey Foote, Manito	1.00
Henry A. Kelm, 2637 Prairie, Chicago	1.00
John Faist, Freeport	1.00
S. F Peterson, Moline	1.00
Tom Beddoes, 318 Mervorn Ave., Rockford	1.00
Jonkman & Oosting, 9417 S. Trumbull, Evergreen Park	1.00
C. F. Rife, Naperville	1.00
Walter Craske, 2148 W. 10th Pl., Morgan Park P. O., Chicago	1.00

(Illinois continued in June)

This list will be continued in June.

Crop and Market Report

Compiled by M. G. Dadant.

For our May Crop and Market Report, we asked reporters to answer the following questions:

1. How did bees come through winter?
2. Are they breeding satisfactorily?
3. Condition of honey plants?
4. Much honey on hand?
5. Have honey prices stiffened?

Bees Through Winter.

There is nothing particularly new to report since our April issue except that the losses perhaps will range heavier than had been anticipated at that time. Where bees were able to get flights at intervals during the winter, the percentage of loss is not great but in the northern sections where the heavy snows and prolonged cold lasted, bees which were wintered out-of-doors have suffered heavy losses. Cellar wintered bees seemed to have come through in excellent shape and are being put out in at least normal condition. Roughly the territory in which the outdoor wintered bees have suffered particularly ranges from a line drawn through north central Iowa through northern Illinois, the north half of Indiana and Ohio, part of New York and the New England states. All north of that line wintered out-of-doors have had their trouble particularly when not protected. In the intermountain territory, the losses do not seem to have been out of proportion, in fact less than usual and the same report is true of the Pacific Coast although bees came out very backward. In the southern sections, of course, there was very little loss through the winter but bees seemed to have consumed a considerable amount of stores.

How Are Bees Breeding?

It is too early in the northern sections to give a report on this but in the central areas from east to west, bees seem to be breeding satisfactorily. In some instances, they are much stronger than they should be at this time of the year. The opposite is true in California where complaints are that the orange blossoms are coming out ahead of time but bees are far behind and the crop of honey from orange will likely be less.

We hear quite a lot of reports from the breeders in the South that the weather has been so backward during early April that it was very difficult to have bees breeding up sufficiently to make prompt shipments on packages. This combined with really an over-demand for package bees this year has given the package breeders just all they wanted to do to keep up.

Condition of Honey Plants.

As reported previously, the heavy snows throughout northern sections have made the honey plant conditions almost ideal. This, however, applies to sections east of Minnesota extending through Michigan, Indiana, Ohio and New York and the New England states. The area just south of this and extending from Indiana into the plains states and into Minnesota and North Dakota, there has not been sufficient moisture and the weather is extremely dry. In the white clover regions, this is almost a threat of no crop since white clover was already in bad shape through the dry fall and winter.

In the Atlantic Coast and in the southern states, the condition of plants is normal or perhaps a little above and this also applies to Louisiana and Texas. Texas seems to be particularly optimistic this year.

It is too early to give any report on the intermountain territory although the amount of water seems to be about normal this year for irrigation. Arizona and New Mexico outside of the irrigated areas are extremely dry. In central and northern California conditions seem to be very good but southern California is very pessimistic and figures that 15 to 20 per cent of a crop will be all that can be expected.

In the Canadian district, all sections report heavy snows and ideal conditions for bees except perhaps in western Manitoba and eastern Alberta. Ontario is especially optimistic.

Honey on Hand.

In practically all instances, reporters state that the honey in the hands of honey producers is negligible. Many beekeepers are out of honey and orders going unfilled. Those who have honey on hand anticipate being able to move the rest of it before the new crop comes on or are holding for better prices. We do not remember a season in recent years where the cleanup of honey has been so satisfactory as it is now and there appears to be a demand from carlot buyers that is not likely to be satisfied.

Honey Prices.

Although quite a number of reporters state that there is a slight stiffening in prices and a tendency for a better outlook in honey, perhaps a majority of reporters state that there has been no appreciable difference in price since January 1. However in a jobbing way, the carload buyers are on the lookout for honey and have been having to pay a higher price, at least 1 cent per pound above previously in order to get their demands fulfilled. This is particularly true on the part of baking honey which has commanded just about as high a price lately as the white honey owing to a scarcity of this product. If the baking demand keeps up and producers do not ask a higher price than is being gotten now, it appears that bakers' grades are going to be readily gobbled up another year. This condition also prevails in Canada with honey although not especially so with the baking grade. Canadian prices have advanced appreciably, at least 1 cent per pound since January 1 and honey in any quantity is difficult to procure as most producers are long ago sold out.

All in all, the season does not look like an average one for honey production throughout most of the United States, looking better than average in Canada.

On the other hand, the possibilities of honey sales do look better than usual and we would not be surprised to see a fall market start in at least at as good prices as the spring market left off. This perhaps is the reason why many producers in the sweet clover areas at least are expanding rapidly anticipating no difficulty in disposing of their crop another year.

There has undoubtedly been a quickening in the demand for package bees due on the part of the central beekeepers who have found higher losses than they had anticipated from wintering and are recuperating with package bees where not in a position to make divisions. We still have reports from several sections that divisions are being made rather than buying package bees to fill up empty combs.

The BEEKEEPER'S EXCHANGE

Copy for this department must reach us not later than the fifteenth of each month preceding date of issue. If intended for classified department, it should be so stated when advertisement is sent.

Rates of advertising in this classified department are seven cents per word, including name and address. Minimum ad, ten words.

As a measure of precaution to our readers, we require references of all new advertisers. To save time, please send the name of your bank and other references with your copy.

Advertisers offering used equipment or bees on combs must guarantee them free from disease, or state exact condition, or furnish certificate of inspection from authorized inspector. Conditions should be stated to insure that buyer is fully informed.

BEES AND QUEENS

BUY THE BEST package bees and queens for 1934. We have them. Vigorous, gentle, disease resistant, three-banded Italians. Best honey producers. Write for information and prices. H. C. Short, Fitzpatrick, Alabama.

"SHE-SUITS-ME" Italian queens at code prices. Allen Latham, Norwichtown, Conn.

CAUCASIANS — Northern bred, shipments June 1st. Twenty-four hour service, satisfaction guaranteed. Code Prices.
Russell-Barnes Apiaries, Morrill, Nebr.

ITALIAN queens. Northern bred. Delivery June 1st.
Eugene Gordon, North Platte, Neb.

CAUCASIAN queens, ready April 1st. 1 to 9, 85 cents; 10 to 24, 80 cents; 25 to 49, 75 cents; 50 or more, 70 cents. Safe arrival, satisfaction. Tillery Brothers, Greenville, Ala.

CARNIOLAN and golden queens and package bees. Code prices.
C. B. Bankston, Buffalo, Texas.

PURE ITALIAN Bees and Queens, the Red Clover and Bright Kind. Queens, 1 to 9, each 85c; 10 to 24, each 80c; 25 to 49, each 75c. 1 lb. of bees with young queen, $1.85. 2 lbs. of bees with young queen, $2.65. 3 lbs. of bees with young queen, $3.40. Write us your wants. We will please you.
Graydon Bros., Rt. No. 2, Greenville, Ala.

WARD'S QUEENS for May 70c each. 2 lbs. of bees and queen, 1 to 9, $2.85. 3 lbs. of bees and queen, 1 to 9, $3.40.
C. W. Ward, Rt. 1, LeRoy, Kansas.

ANY SIZE COMB or combless package of bees or queen at U. S. minimum Code prices, and terms. Jes Dalton, Kenner, La.

CAUCASIAN Queens and Bees for April and May delivery. Select untested queens, 1 to 9, 85c each; 9 to 24, 80c each; 25 to 49, 75c each. 2 lb package with queen, 1 to 9, $2.65 each; 3 lb. package with queen, 1 to 9, $3.40 each. Write for price on large shipment.. P. B. Skinner Bee Co., Rt. No. 5, Greenville, Alabama.

GOLDEN ITALIAN QUEENS, one to nine, 85 cents each; ten to twenty-four, 80 cents each; twenty-five to forty-nine, 75 cents each. A. M. Kelly, Bell, Florida.

EXTRA YELLOW ITALIAN QUEENS — Spring is late but hope to start mailing untested early in May at Code prices. 1 to 9 queens, 85c each; 10 to 24, 80c each; 25 to 49, 75c each; 50 or more, 70c each. Same service and guarantee. Hazel V. Bonkemeyer, Rt. 2, Randleman, N. C.

GOLDEN ITALIAN QUEENS noted for their gentleness and honey gathering. Code prices, 1 to 9, 85c each; 10 to 24, 80c each. Satisfaction guaranteed in U. S. and Canada. E. A. Simmons Apiaries, Powell Owen, Mgr., Greenville, Ala.

THREE-BANDED Italian bees and golden queens have been my specialty for ten years. Price: 1-9, 85c. 10-24, 80c each. Nuclei with queen introduced at code prices.
Victor Prevot, Mansura, La.

THE BEST Italian Bees and Queens at code prices. Place your order now.
W. L. Ritter, Rt. No. 1, Hampshire, Ill.

ITALIAN Queens and Caucasian the very best strains, that are reared right from a breeder of 50 years' experience. Prices at code prices. Can send queens by May 15th. Daniel Wurth, Toppenish, Wash., Rt. No. 1.

SAVE express on package bees and nuclei. Will trade bees or queens for honey or supplies. Atha Hardy, Pulaski, Tenn.

ITALIAN Queens that produce 3-banded bees. With our new system of cell building, and queen mating, we have as good queens as can be produced for getting honey. Our yards may be nearer to you. If so, give us a trial order for good stock and promptness. 32 years a queen breeder.
J. F. Diemer Company, Liberty, Mo.

THREE-BANDED Italian Queens that produce good workers and gentle to work with at code prices.
Alamance Bee Co., Graham, N. C.

NORTHERN Caucasian Queens are gentle, vigorous, prolific, bred right and personally reared. They produce hordes of bees that get the honey. 20 up, 75c; less than 20, 80c. June delivery. No packages.
Bird's Apiaries Odebolt, Iowa.

ITALIAN Queens and Package Bees at code prices. Mountain reared for the hardiness of the North. Mt. Lassen Honey Co., C. C. Wenner, Mgr., Paynes Creek, Calif.

HONEY FOR SALE

CHOICE Michigan Clover Honey. New 60's. David Running, Filion, Michigan.

HONEY FOR SALE—Keep your customers supplied with honey. We can furnish white and light amber honey at attractive prices. Packed in 60-lb., 10-lb. or 5-lb. tins. Dadant & Sons, Hamilton, Ill.

FOR SALE—Northern white, extracted and comb honey. M. W. Cousineau, Moorhead, Minn.

HONEY FOR SALE—Any kind, any quantity. The John G. Paton Company, 280 Park Avenue, New York.

FOR SALE—Well ripened clover honey, carlot or local shipments. Will be pleased to submit sample. Also new crop section comb honey, in carrier crates of four or eight cases. The Colorado Honey Producers' Association, Denver, Colorado.

FINE QUALITY ORANGE, palmetto and mangrove honey in new sixties. Sample 6c. Peter W Sowinski, Ft. Pierce, Florida.

WHITE and light amber extracted honey, any amount.
Hyde Brothers, New Canton, Ill.

WHITE clover extracted honey. Write for prices and sample.
Kalona Honey Co., Kalona, Iowa.

MICHIGAN white clover honey of finest quality in new 60-lb. cans. Also comb honey. Orval W. Dilley, Grand Ledge, Mich.

HONEY AND BEESWAX WANTED

WANTED—HONEY and BEESWAX. Beekeepers will find it to their advantage to communicate with us. Please send samples, state quantity available and prices. CALIFORNIA HONEY COMPANY, Hamilton & Company, Agents, 108 W. Sixth Street. Los Angeles, California.

WANTED—Car lots honey; also beeswax, any quantity. Mail samples, state quantity and price. Bryant & Cookinham, Inc., Los Angeles, Calif.

FOR SALE

100 10-frame colonies Italians, supers, extracting equipment. Fine shape. Northern Minnesota Sweet Clover area.
Box X, American Bee Journal, Hamilton, Ill.

SACRIFICE 75 colonies bees and equipment.
Fred Ephardt, Luling, La.

COMPLETE garden drill. Good as new. Reasonable. Frank Augenstein, Dakota, Ill.

SELL used 8 and 10-frame hives. No disease.
Joseph Burk, Norwalk, Iowa.

400 colonies of bees. Poor health reason for selling. Lewis Elwood, Fort Plain, N. Y.

WANTED

WANTED—Machinery for making bee hives and foundation, electric driven, need lock corner machine. Lee Lantz, Scooba, Miss.

WANTED—Bees on shares in Wisconsin.
Fred Pruim, Birnamwood, Wis.

FARMERS WANTED, age 18 to 50, to qualify for Government Meat Inspectors and other suitable Federal Positions; Commence $105 to $200 month. Valuable information Free. WRITE IMMEDIATELY, Instruction Bureau, 244, St. Louis, Mo.

YOUNG MAN, experienced in commercial honey production, wants work June 1st to Sept. 15th.
Orlin Barrick, Minnewaukan, N. Dak.

EXPERIENCED BEEKEEPER, single, wants employment with beekeeper or bee company. Year around work preferred. Write
Lawrence Robins, Mt. Sterling, Ill.

WANTED—Yard of bees, Southern Iowa, Missouri or Arkansas. State number colonies and price.
L. A. Syverud, Aberdeen, S. Dak.

SUPPLIES

BEST QUALITY bee supplies, attractive prices, prompt shipment. Illustrated catalog on request. We take beeswax in trade for bee supplies. The Colorado Honey Producers' Association, Denver, Colo.

READY WIRED FRAMES. Just what you have been looking for. Each frame contains four horizontal wires, permanently fastened. Shipped in the flat. Ask for literature. A. E. Wolkow, 384 State St., Hartford, Wis.

PORTER BEE ESCAPES save honey, money, avoid stings; faster most efficient. Sample 15c. R. & E. C. Porter, Lewistown, Ill.

DIFFERENT, that's all. Written and published for the instruction of beekeepers. 52 pages of breezy entertaining beekeeping comment each month. One year, $1.00; two years, $1.50. Sample, 3c stamp.
The Beekeepers Item, San Antonio, Texas.

MEDIUM brood foundation, 10 pounds, $4.25. Fred Peterson, Alden, Iowa.

FOR SALE—Comb foundation at money saving prices. Plain, wired and thin section. Wax worked at lowest rates.
E. S. Robinson, Mayville, N. Y.

VEILS—Handy net style, 13c each postpaid; 2-frame nucleus shipping boxes, 5c. 2-pound combless package shipping boxes, 5c each. Write for bargain list books, brushes, box seats, feeders, extractors, shipping cases, excluders, toys, F.O.B. Lewis warehouses. Subject to stock close out prices.
G. B. Lewis Company, Watertown, Wis.

THE PINARD Nailless Queen Bee Shipping Cage. Send for Sample. Agents—Diamond Match Co., Chico, Calif., Roy S. Weaver & Bro., Navasota, Texas. A. B. Pinard, Mfg., 810 Auzerais, San Jose, Calif.

B. B. PLIERS & HIVE TOOL COMBINED. Danger of being stung greatly reduced. You will find them very practical and handy tool. Never be without them after once adopted. Delivered by mail for $1.00. California Bee & Tool Co., 810 West Pedregosa Street, Santa Barbara, California.

SAVE queens. Safin cages now 15c. Ten for $1.00. Allen Latham, Norwichtown, Connecticut.

MISCELLANEOUS

BEE STINGS. Instant relief. Write me. J. Ches. Turner, Rt. No. 1, Box 160, Reidsville, N. C.

OLD BEE BOOKS WANTED—Lizzy E. Cotton and Henry Alley books. A. E. Potter, 148 Shaw Avenue, Edgewood, Rhode Island.

HONEY LABELS and printing. Catalog and samples free. Correspondence solicited. Traders Printing Company, Springfield, Mo.

PLANS FOR POULTRY HOUSES — All styles; 150 illustrations. Tells you the type to build for your particular locality. Secret of getting winter eggs, and copy of "Inland." Send 25c. Inland Poultry Journal, Spencer, Indiana.

THE BEE WORLD—The leading bee journal in Great Britain and the only international bee review in existence. Specializes in the worlds news in both science and practice of apiculture. Specimen copy, post free, 12 cents stamps. Membership of the Club, including subscription to the paper, 10/6. The Apis Club, Brockhill, London Road, Camberley, Surrey, England.

STATEMENT OF OWNERSHIP

Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, of American Bee Journal, published monthly at Hamilton, Illinois, for April 1, 1934.

STATE OF ILLINOIS, } ss.
County of Hancock, }

Before me, a notary public in and for the state and county aforesaid, personally appeared M. G. Dadant, who, having been duly sworn according to law, deposes and says that he is the business manager of the American Bee Journal, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, rendered by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse side of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor and business manager are:

Publishers, American Bee Journal, Hamilton, Ill.
Editor, C. P. Dadant, Hamilton, Ill.
Managing editor, G. H. Cale, Hamilton, Ill.
Business manager, M. G. Dadant, Hamilton, Ill.

2. That owners are:

American Bee Journal, Hamilton, Ill., owned by
C. P. Dadant, Hamilton, Ill.
H. C. Dadant, Hamilton, Ill.
V. M. Dadant, Hamilton, Ill.
C. S. Dadant, Hamilton, Ill.
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M. G. Dadant, Hamilton, Ill.
Leon Saugier, Hamilton, Ill.
Joseph Saugier, Hamilton, Ill.

That the known bondholders, mortgagees and other security holders owning or holding one per cent or more of the total amount of bonds, mortgages or other securities are: None.

(Signed) M. G. DADANT,
Business Manager American Bee Journal.

Sworn to and subscribed before me this twenty-first day of March, 1934.

BIRDIE ASH,
Notary Public.

My commission expires March 15, 1938.

The POSTSCRIPT

GOSSIP ABOUT THE OFFICE IN THE MAKING OF THE MAGAZINE

Many years ago American exporters shipping honey to London in order to avoid breakage of the glass jars in which the honey was packed labeled the boxes "Handle gently—Dynamite—Certain Destruction." It probably had the desired effect in securing careful handling of the packages but the shippers got into court and secured some undesirable publicity.

— : —

The use of wire in supporting combs is well nigh universal although many ways of putting in the wire are in practice. In spite of the importance of this fact the inventor is all but unknown to the present generation. Captain Hetherington of Cherry Valley, New York, obtained a patent for all kinds of wire supports for foundation including wired frames. He seems to have profited but little from the patent.

— : —

The development of the business of shipping live bees in combless packages seems to be due principally to the expansion of the sweet clover area. An attempt was made to develop a live bee business as long ago as 1879 and a dozen men were advertised as willing to supply live bees. Although difficulties arose the thing was dropped for lack of sufficient demand. In 1913 the interest was revived and the demand has since continued to expand in proportion to the expansion of the area of sweet clover. Packages are sold elsewhere, of course, but not in sufficient volume to make a shipping industry.

— : —

With reference to getting honey to granulate for exhibition at the fair as previously mentioned on this page, J. H. Sturdevant of St. Paul, Nebraska, writes that he secures very prompt granulation by adding a little granulated honey from the previous season. This is a good point to bear in mind, but it still leaves unanswered the question of my correspondent who wanted to know how to keep this year's granulated honey in the proper condition for next year's exhibition.

— : —

One reader wants to know how much sweet clover should be within reach of his bees to insure a crop. There seems to be no means of ascertaining how much honey comes from a certain area of any plant. It seems safe to say, however, that one can expect a good crop in the middle west with one acre of sweet clover within reach of every two colonies of bees. At times sweet clover will support a much larger bee population, probably as much as five colonies per acre where other plants are also present to insure prosperity during the rest of the season.

— : —

W. J. Boughen of Valley River, Manitoba, is a most interesting person. He is a pioneer fruit grower and beekeeper in the region 180 miles north of Winnipeg. He has succeeded with fruit far north of the region where fruit was supposed to grow. Likewise he was the first in Manitoba to sow sweet clover on cultivated land as a crop and was denounced by his neighbors and ridiculed by a professor of the agricultural college as well. Since everybody grows sweet clover now, he may well be proud of his record at pioneering. I count him among the valued friends I made on my visit to Manitoba in 1925, and greatly enjoy his letters.

— : —

Mr. Boughen writes that his bees were put in the cellar on October 21 with a foot or two of snow then on the ground. On March 26, after five months, there was still two feet of snow with zero weather prevailing. That north country is beautiful in summer but a bit too snug for me in winter.

— : —

Frederick Hahman of Altoona, Penn., comes to the defence of Quinby in what I think a very fair estimate. He says that Quinby was able to make a success of beekeeping in box hives before Langstroth invented the movable frame and that he demonstrated that honey production could be made a successful financial venture and thus he was the pioneer commercial honey producer. Because of his leadership New York became the dominant honey producing area before others were exploited.

— : —

The day before Easter the express man came to the door with a big box of daffodils which had come all the way from Tacoma, Washington. To our surprise they were in fine condition after a journey of about 2000 miles and four days on the way. This speaks well for the care used by George Lawler the bulb grower who sent them and for the express company which was able to make delivery at such a distance. If perishables can be handled so successfully it should result in increase volume of express shipments. The flowers brightened a rainy Easter and placed me under obligations to Lawler.

— : —

When we are talking about famous beekeeping sayings, we might look to European publications for some which might well become known in this country. One especially expressive is by the Swedish beekeeper, Alexander Lundgren, "The entrance of the hive is the mirror of the colony."

How much we can judge of the strength and condition of the bees by the flight at the entrance.

— : —

A man may be called radical because he resents the fact that an empty headed girl gets more money per week in the movies than our teachers get per year for instructing our children, or a thick skulled prize fighter gets more for one fight than a food producer earns in a lifetime of feeding the public; but it is these inequalities which threaten our present organization of society. Until such injustice is corrected the threat will remain. Much as we fear the outcome of some of the new deal experimenting, we are glad to see an effort to secure a more equitable division of national income.

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A commercial traveler who calls on the merchants of this region recently came to our town. He remarked that he longed to be able to get into the country where he could forget the struggle of business and pass the remainder of his life free from worry. There is plenty to worry about in the country, as those of us who have spent much of our lives there well know, but it is possible to forget the irritations and disappointments of life through our interest in everyday affairs. My friends among the beekeepers are a more contented lot than my friends in town and most of them appreciate the advantages of their situation.

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The retirement of E. L. Sechrist from the beekeeping work in the U. S. Department of Agriculture has recently been announced. Sechrist has probably had experience with beekeeping under a greater variety of conditions than any other American. For a time he lived in Africa and is familiar with the dark continent. Later he kept bees on a large scale in the West Indies and at one time he was in the South Sea Islands. In this country he has been active from Washington, D. C. to California, and his wide experience and vast fund of information has been very useful in his official position. We wish him well and expect that he will continue to do worth while things wherever he goes.

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A grasshopper poisoning campaign is being planned for the middle west and in some neighborhoods beekeepers are fearful of the results. So many bees have been killed by poison used for so many different pests that it is always wise to be on guard when poison is used. Wholesale use of poison always results in the destruction of useful creatures along with the injurious ones. Too often the beekeeper is unprotected.

FRANK C. PELLETT.